

2020 Quarter 2 Quarterly Update Webinar

South Atlantic Coastal Study
June 29, 2020

CONNECTION INFORMATION:

Webinar:

<https://attendee.gototraining.com/r/4994559464465664002>



US Army Corps
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Meeting Purpose

- 1 Provide an Update on Overall SACS Progress since the last Quarterly Webinar in March 2020
- 2 Review Status, Regional Study Products
- 3 Update on the Progress of State Appendices
- 4 Preview of Upcoming Workshops: Focus Areas/Environmental/Cultural
- 5 Q&A via Chat Function (15-20 min)



SACS Quarterly Update Webinar: Agenda



SACS Overview

- Team Introductions
- SACS Shared Vision Statement
- Schedule Overview

Regional Products Update

- SAND Workshops and Interim Findings
- Geospatial Update
- State/Territory Appendices Overview
- Focus Area Overview
- Planning Aid Report
- Environmental Update
- Coastal Hazard System
- Institutional and Other Barriers Interim Findings

Updates from District Project Managers

- Wilmington
- Charleston
- Savannah
- Jacksonville
- Mobile

Next Steps and Closing Remarks

- 21 Focus Area Action Strategy Workshops
- Regional Environmental Workshop
- Finalization of SAND Report
- Measures and Cost Library refinement
- CHS SA/GoMex CSTORM runs

Questions & Discussion

- Questions
- Open Discussion



Team Introduction



Command Center Team:

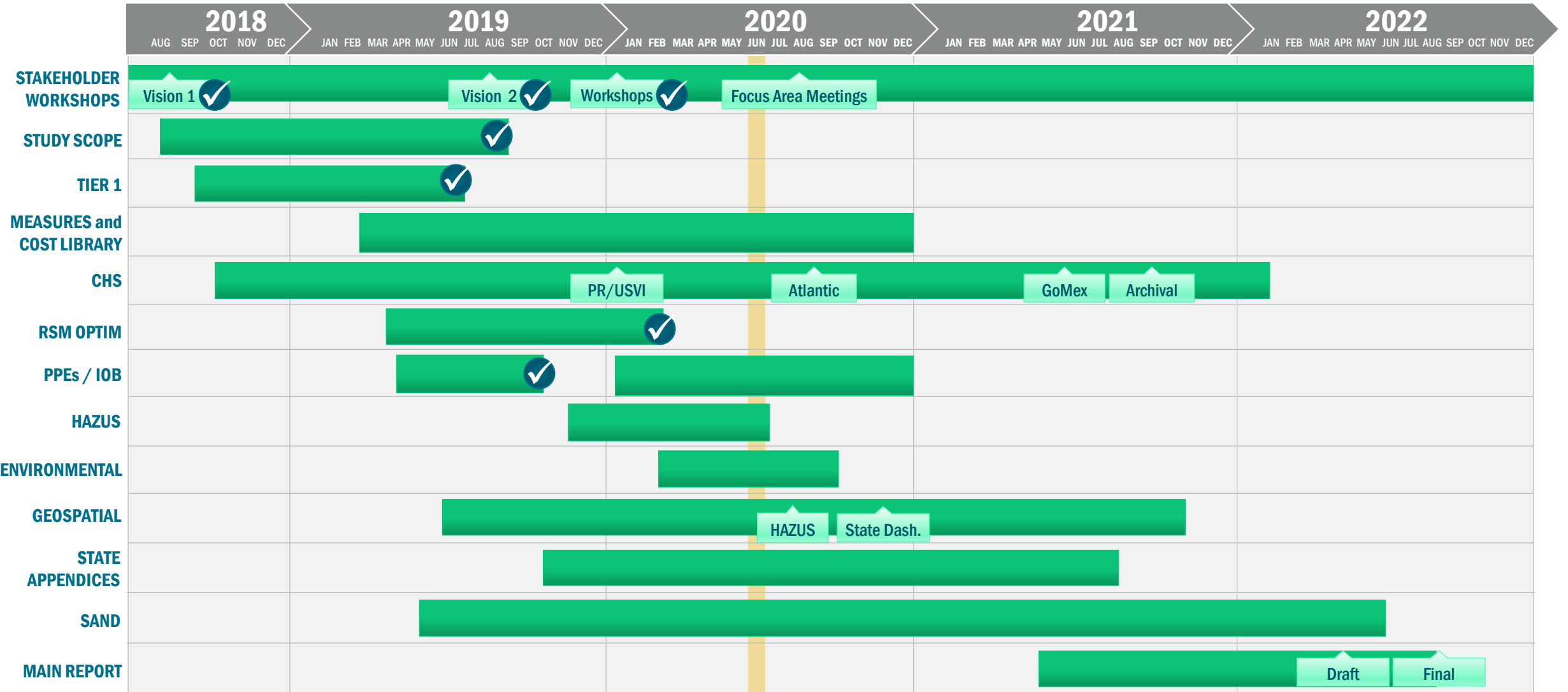
Pam Castens	Regional Project Manager
Lisa Clark	Outreach Lead
Idris Dobbs	Economics Lead
Trevor Lancaster	Geospatial Lead
Kelly Legault	Engineering Lead
Kristina May	Environmental Lead
Clay McCoy	Regional Sediment Management Lead
Matt Schrader	Planning Lead

District Project Managers:

Brennan Dooley	Wilmington District PM
Diane Perkins	Charleston District PM
April Patterson	Savannah District PM
Ashleigh Fountain	Jacksonville District PM
Meredith Ladart	Mobile District PM



Overview of Activities



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SHARED VISION STATEMENT



"The SACS vision is to provide a common understanding of risk from coastal storms and sea level rise to support resilient communities and habitats. This collaborative effort will leverage stakeholders' actions to plan and implement cohesive coastal storm risk management strategies along the South Atlantic and Gulf Coast shorelines, including the territories of Puerto Rico and the U.S. Virgin Islands."

Hazard + Performance + Exposure + Vulnerability + Consequences = Risk



Figure 1: Risk Conceptualized (ER 1105-2-101)



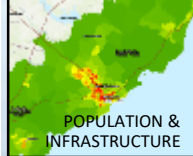
SOUTH ATLANTIC COASTAL STUDY KEY PRODUCTS



RISK ASSESSMENT



Assessment based on exposure of population and infrastructure, environmental and cultural resources, and social vulnerability to inundation hazards.



SACS TIER 1 RISK ASSESSMENT
<https://sacs.maps.arcgis.com/apps/MapSeries/index.html?appid=c54beb5072a04632958f2373eb1151cf>

REGIONAL SEDIMENT MANAGEMENT (RSM) OPTIMIZATION



OPTIMIZATION PILOT:
2016 USACE INNOVATION OF THE YEAR

Identifies and quantifies total contribution of RSM principles to projects in the SACS study area that support long-term coastal resiliency.

NOW AVAILABLE ON WEB PAGE

SAND AVAILABILITY & NEEDS DETERMINATION (SAND)

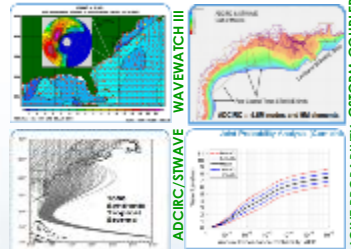
Determines the need and availability of sediment to maintain beaches for the next 50 years.



HYDRAULIC DREDGE WORKING IN ST. AUGUSTINE, FLORIDA

COASTAL HAZARDS SYSTEM (CHS)

Provides current and projected water elevation data for the study area.



GEOPORTAL

Provides the public access to study datasets, products, and documentation.



HABITAT AND ENVIRONMENT DATASETS

POPULATION INFRASTRUCTURE DATASETS

HAZARD DATASETS

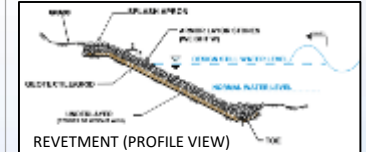
FOCUS AREA DATA

DERIVED PRODUCTS



MEASURES & COSTS LIBRARY

Detailed list of Coastal Storm Risk Management (CSRM) measures and their costs developed to a screening level for use in USACE and stakeholder planning.



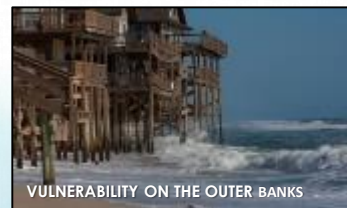
RETENTION (PROFILE VIEW)



BEACH NOURISHMENT

COASTAL PROGRAM GUIDE

Outreach and information package to help communities better leverage needed resources on a disaster-wide, statewide, or community-wide basis.



VULNERABILITY ON THE OUTER BANKS

STATE & TERRITORY APPENDICES

Specific information for each state and territory will be provided in stand-alone appendices to the main report.



APPENDICES:
North Carolina
South Carolina
Georgia
Florida
Alabama
Mississippi
Puerto Rico
U.S. Virgin Islands

PRIORITY ENVIRONMENTAL AREA IDENTIFICATION

Priority environmental areas will be identified using Tier 1 data, the USFWS Planning Aid Report, and stakeholder tools. Resiliency to coastal storms and sea level rise will be evaluated and measures to increase resiliency will be recommended.



TIER 1 ENVIRONMENTAL, CULTURAL & HABITAT EXPOSURE

PLANNING AID REPORT (U.S. FISH AND WILDLIFE SERVICE (USFWS))

Report of priority biological resource habitats in the South Atlantic region that are vulnerable to harm from coastal storms and sea level rise with a focus on areas used by federally listed species. Report will also include a description of risk to coastal national wildlife refuges.



NOW AVAILABLE ON WEB PAGE

INSTITUTIONAL & OTHER BARRIERS ANALYSIS

Document identifies institutional and other barriers to providing comprehensive protection for affected coastal areas. The report will include information on the performance of existing federal CSRM projects and recommendations for improvement.



FLORIDA BEACH AFTER 1962 NOR'EASTER - WITHOUT FEDERAL CSRM PROJECT



FLORIDA FEDERAL CSRM PROJECT POST-TROPICAL STORM FAY, 2008

FOCUS AREA ACTION STRATEGIES

Focus area action strategies (FAAS) will use SACS products in combination with other resources to develop actionable risk reduction strategies with stakeholders. FAAS will serve as examples for how vulnerabilities in other high risk locations can be addressed.



SOUTH ATLANTIC REGION HURRICANES

FOR MORE INFORMATION, VISIT THE SACS WEBSITE: <https://www.sad.usace.army.mil/SACS/>

U.S. ARMY CORPS OF ENGINEERS | SOUTH ATLANTIC DIVISION

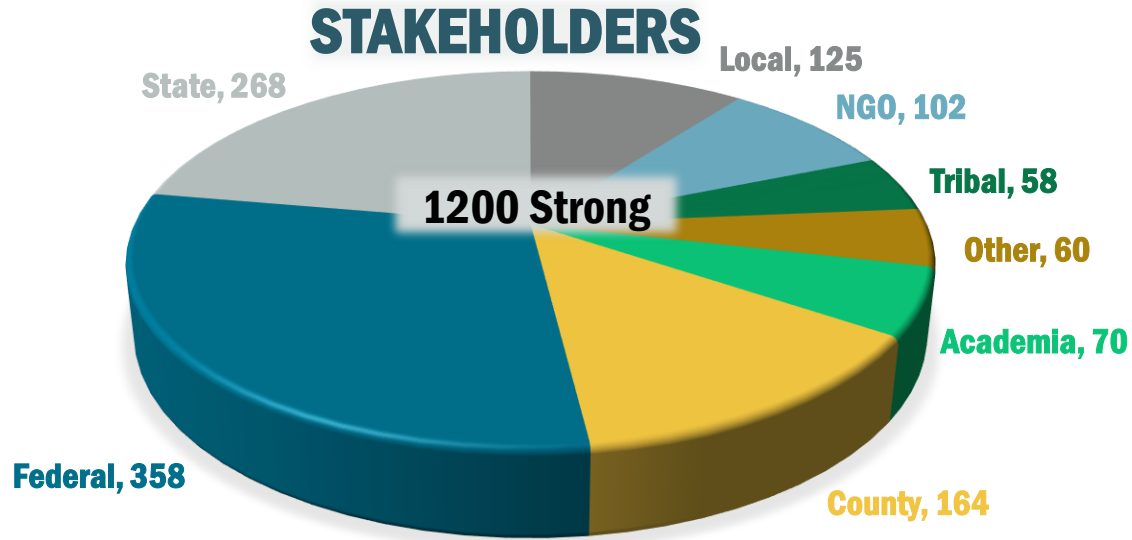




Regional Product Updates



South Atlantic Coastal Study



South Atlantic Coastal Study - SACS



Latest Updates

May 2020 SACS Newsletter

Get the latest project updates via our monthly newsletter

Next Quarterly Progress Briefing

The next quarterly progress briefing has been scheduled for Monday, June 29th from 1 – 3 pm EST. This meeting is open to all stakeholders and registration is currently open [here](#).

SACS FSBPA Presentation

South Atlantic Coastal Study Team members present at FSBPA Tech Conference, in Sarasota, February 5-7, 2020.

Shared Vision

"The SACS vision is to provide a common understanding of risk from coastal storms and sea level rise to support resilient communities and habitats. This collaborative effort will leverage stakeholders' actions to plan and implement cohesive coastal storm

<https://www.sad.usace.army.mil/SACS>

Email: SACS@usace.army.mil

Geoportal

<https://sacs.maps.arcgis.com/apps/MapSeries/index.html?appid=c54beb5072a04632958f2373eb1151cf>

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SAND: Sand Availability and Needs Determination

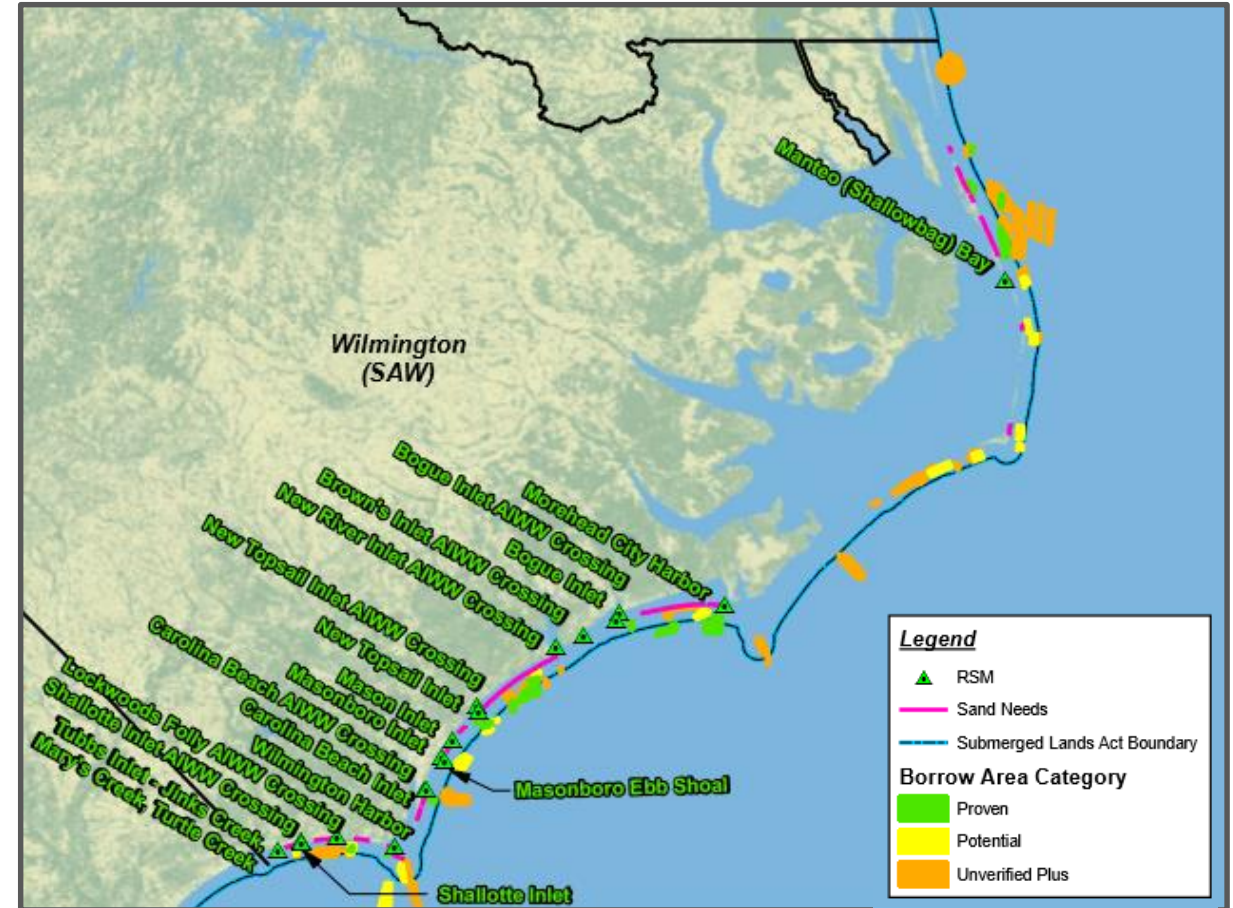


- **Activities during Q2**

- Completed availability and needs assessment
- In-house technical workshop: 28 May
- District stakeholder workshops: (available at: <ftp.taylorengineering.com>; SANDWorkShops; HappySand)
 - Savannah – 8 June
 - Charleston – 9 June
 - Wilmington – 11 June
 - Jacksonville – 16 June
 - Mobile – 17 June

- **Upcoming activities**

- Final data input: 3 July
- Finalize database and write report
- Project complete: end of October



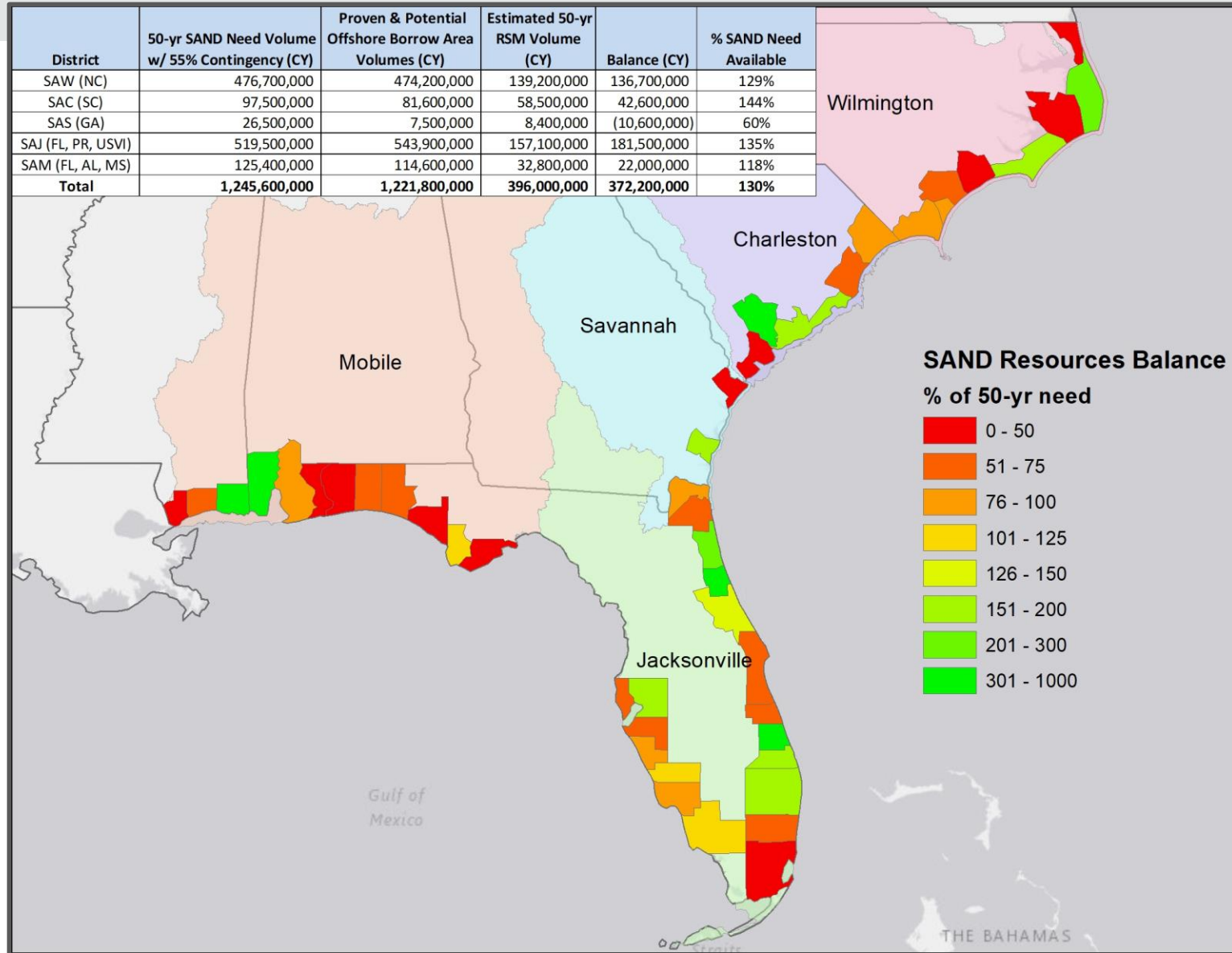


SAND Preliminary Results



- **Highlights**

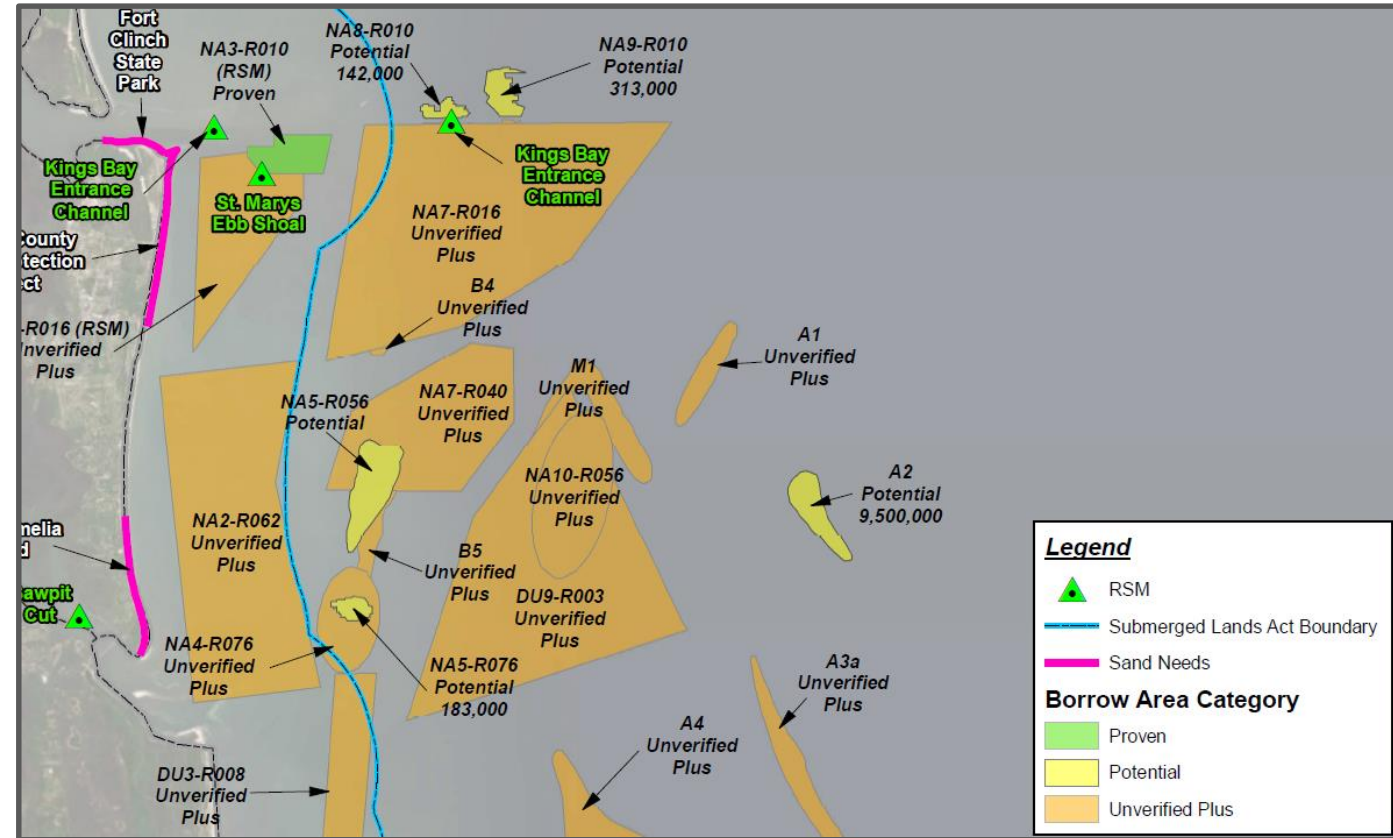
- > 1.2 billion CY need in South Atlantic Division for next 50 years
- All states except GA currently have availability to meet needs
- All states have areas with significant sediment deficits
 - Most of NC
 - South Florida
 - Florida Panhandle



SAND Preliminary Recommendations and Next Steps



- **Investigate Unverified Plus sites for areas with sand deficits**
 - Resource areas hypothesized to exist based on limited data
- **Innovate to reduce contingency factor**
 - 55%: borrow area inefficiencies, dredging losses, future project performance including sea level rise impacts
- **Utilize flexibility in state regulations**
 - Nearshore placement
 - Beneficial use

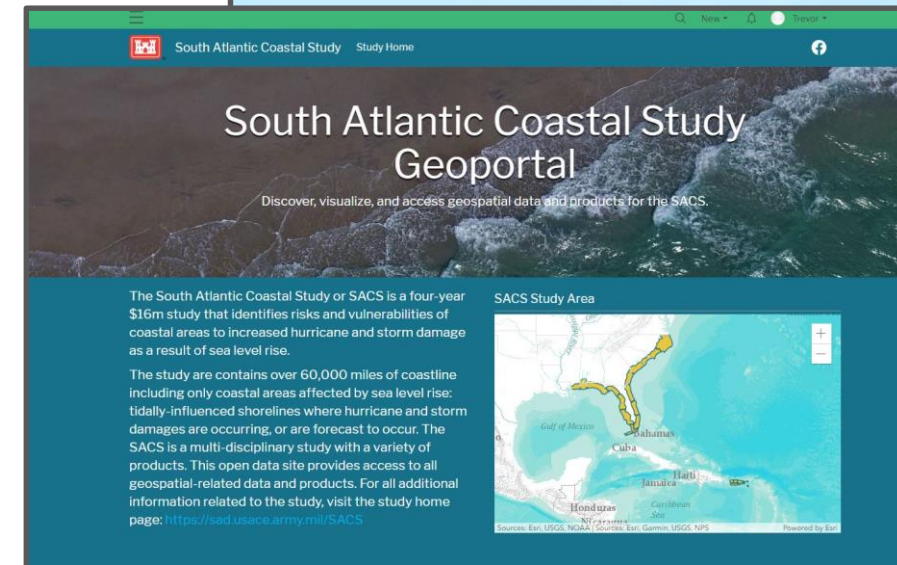
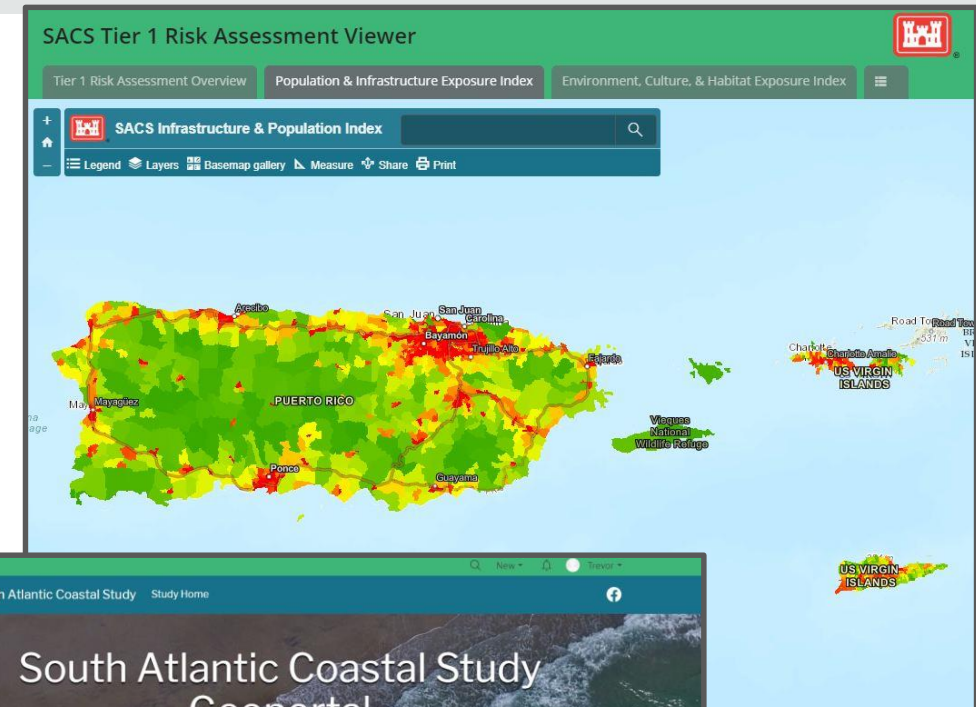


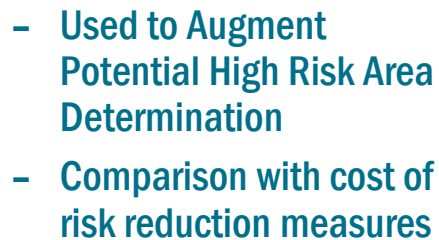


SACS Geospatial Update



- **Complete**
 - Tier 1 Risk Assessment – Puerto Rico & USVI →
- **In-Progress**
 - Tier 1 Risk Assessment Download Web Application
 - HAZUS Web Application
 - SACS OpenData Site →
 - State and Territory Appendix Web Applications
 - Environmental Vulnerability Analysis





- **Suite of risk reduction options considering:**

- Hazard Conditions
 - Inundation
 - Wave Attack
 - Erosion
- Shoreline Conditions
 - Exposure to Wave & Tidal Energy
 - Shoreline substrate, shape, slope,
 - Development
 - Coastal Wetlands
- Exposure – What do we want to reduce risk to?

- **Risk Reduction Philosophy**

- Retreat & Adapt
- Shoreline Restoration
- Shoreline Stabilization
- Shoreline Armoring

- **Cost Considerations**

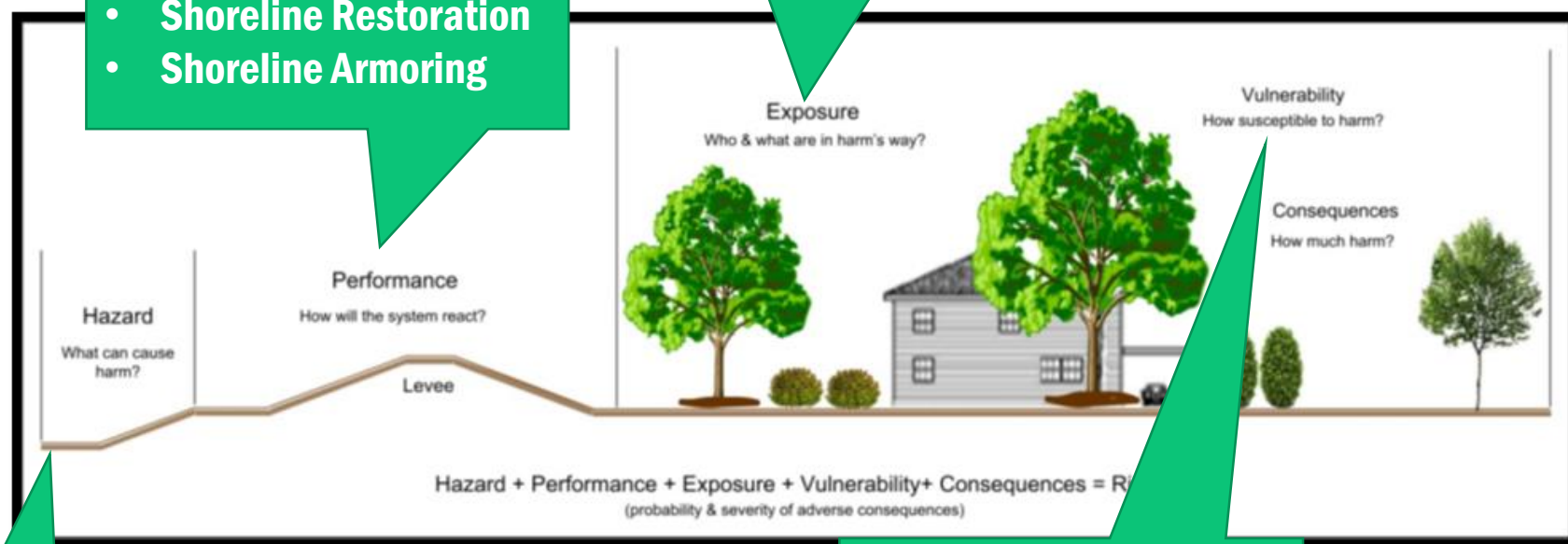
- Regional Location
- Uncertainty

Manage the Hazard:

- Shoreline Stabilization
- Shoreline Restoration
- Shoreline Armoring

Reduce the Exposure:

- Retreat
- Buyout / Acquisition



**Inundation,
Wave Attack,
Erosion**

Adapt to the Hazard:

- Asset Elevation
- Wet Flood Proofing
- Dry Flood Proofing



MCL & Damage Estimation Present & Future Activities



• Present

- QC Review of MCL
- Completion of MCL & FADE technical write-ups

• Near Future Considerations

- Linkage of \$ damage risk & shoreline types
- Linkage of MCL & shoreline types
- Finalization of MCL by Contractor

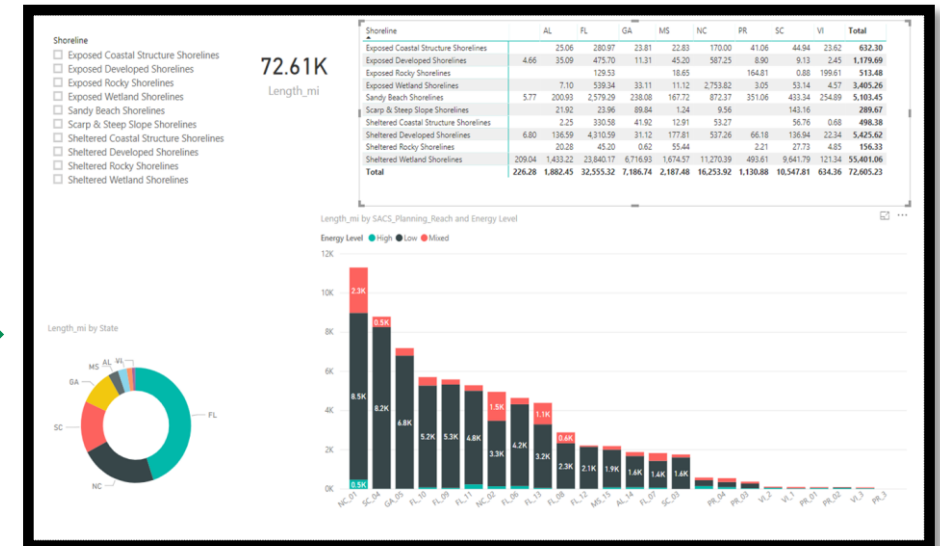
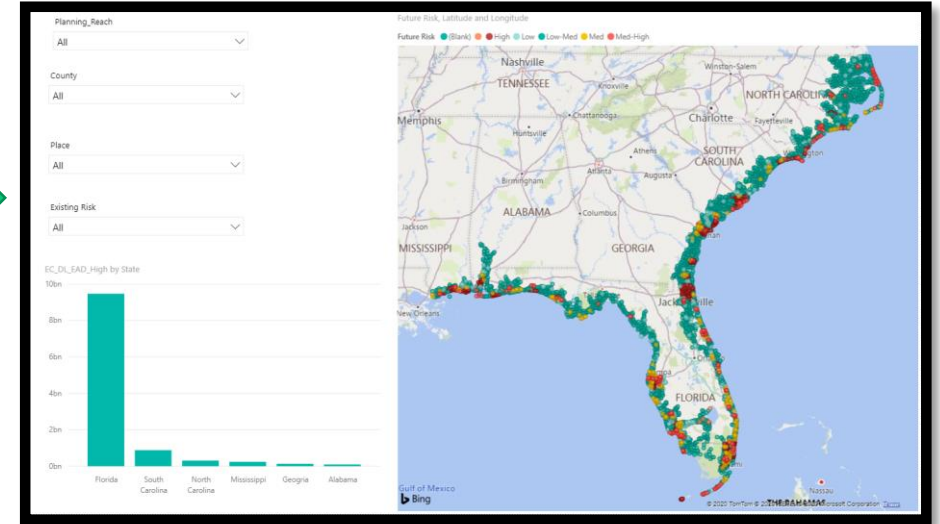
• Future Considerations

- Development of data model linking components of Tier-2 economic risk assessment & measures
- Development of web-tools for public access

Distribution of
Economic Risk over
Space

MCL Unit
Cost Range
by
Planning
Reach

Distribution of
Shoreline Type &
Exposure to Wave &
Tidal Energy



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State & Territory Appendices – High Risk Locations



- Summary tables of high risk locations based on Tier 1 and Tier 2.
- Include factors indicating potential high risk.
- Environmental and cultural resource considerations to be added.
- Example DRAFT table excerpted from northeast Florida (all locations not shown).

Northeast Florida (FL_06) High Risk Locations		Tier 1		Tier 2					
		Tier 1 Risk Assessment		Hazard (Level 1)				FDEP Critically Eroded Area	
		Hazard is inundation. Exposure is composed of population, infrastructure, environmental and cultural resources, habitat, and social vulnerability.		Hazard is inundation. Exposure is composed of infrastructure.				Hazard is erosion. Exposure is composed of infrastructure, recreational resources, wildlife habitat, and cultural resources.	
County	Census Place or Location Name	Identified as Existing High Risk Location	Identified as Future High Risk Location	Existing Infrastructure Damage (\$)	Damage Rating	Future Infrastructure Damage (\$)	Damage Rating	Identified as FDEP Critically Eroded Area	FDEP Range Monuments
Clay	Oakleaf Plantation	X	X	\$5,000	Low	\$67,000	Low		
Clay	Fleming Island	X	X	\$17,699,000	Med	\$44,639,000	Med-High		
Flagler	Beverly Beach			\$491,000	Low	\$1,223,000	Low	X	R065.2-R067
Flagler	Marineland		X	\$20,000	Low	\$58,000	Low	X	R001-R004
Flagler	Hammock			\$3,441,000	Low-Med	\$12,119,000	Med		
Duval	Jacksonville Beach	X	X	\$9,476,000	Low-Med	\$33,051,000	Med	X	R59-R080
Duval	Atlantic Beach	X	X	\$5,642,000	Low-Med	\$22,218,000	Med	X	R39-R53
St. Johns	Palm Valley	X	X	\$70,579,000	Med-High	\$135,750,000	High		
Volusia	Daytona Beach	X	X	\$11,573,000	Low-Med	\$44,472,000	Med-High	X	R066.5-R093
Volusia	Ormond Beach	X	X	\$7,472,000	Low-Med	\$34,032,000	Med-High	X	R057-R066.5
Duval	Neptune Beach	X	X	\$3,194,000	Low	\$12,491,000	Low-Med	X	R53-R59
Flagler	Flagler Beach	X	X	\$6,608,000	Low-Med	\$13,024,000	Low-Med	X	R067-R070
Flagler	Fox Cut back bay			\$12,399,000	Med	\$25,258,000	Med-High		



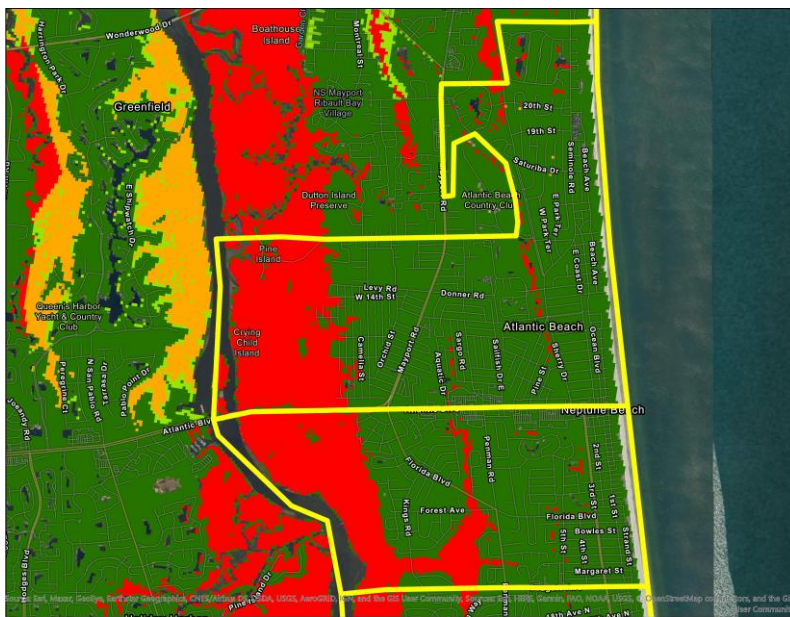
State & Territory Appendices – High Risk Locations



Tier 1 Potential High Risk Location Thresholds

- **med-high and/or high potential risk (amber and red colors):**
 - cover at least 50 acres and
 - cover at least 0.5% of census place

Tier 1 Composite Risk overlain with US census place boundaries



Tier 1 Risk Assessment		H
Hazard is inundation. Exposure is composed of population, infrastructure, environmental and cultural resources, habitat, and social vulnerability.		Ha
Identified as Existing High Risk Location	Identified as Future High Risk Location	E
X	X	
X	X	
	X	
X	X	
X	X	

WORKING DRAFT



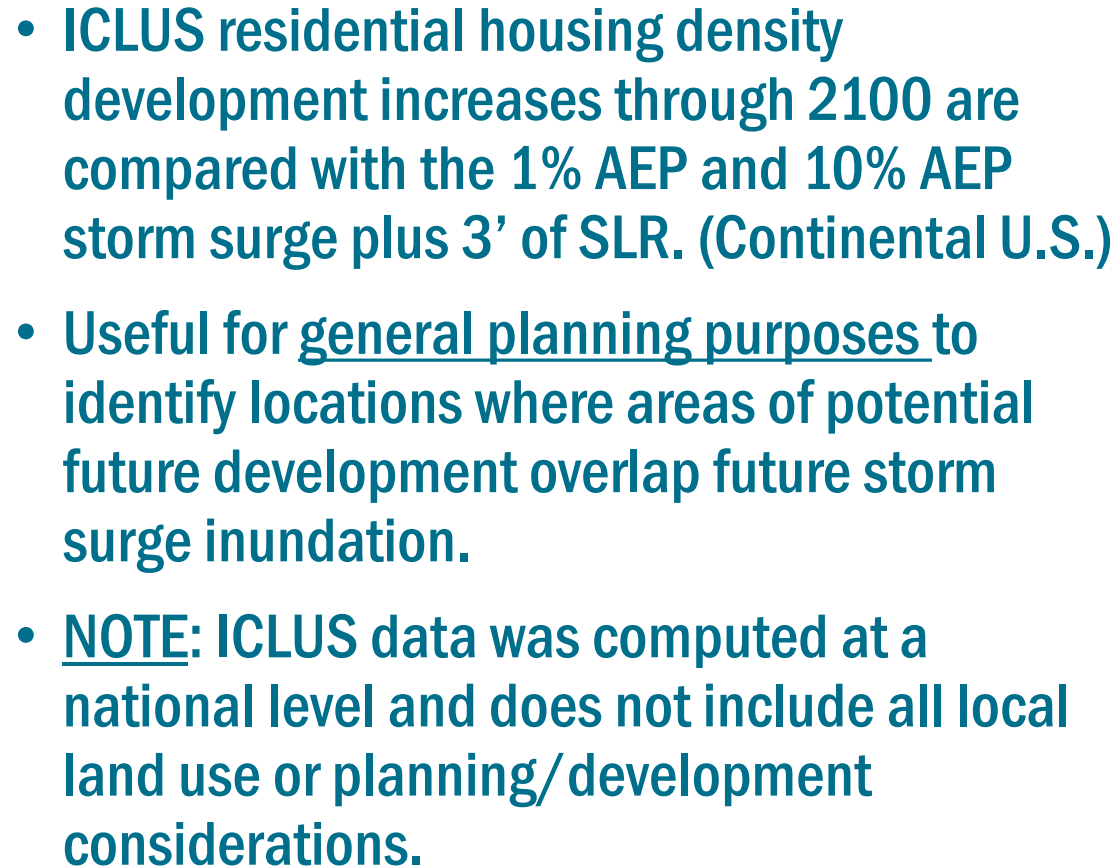
State & Territory Appendices – High Risk Locations



- **Tier 2**

- Tier 2 data added detail and/or additional high risk areas.
- Hazus data provided for entire SACS study area.
- Other state/territory-specific data included.

Tier 2					
Hazus (Level 1)				FDEP Critically Eroded Area	
Hazard is inundation. Exposure is composed of infrastructure. <div>WORKING DRAFT</div>				Hazard is erosion. Exposure is composed of infrastructure, recreational resources, wildlife habitat, and cultural resources.	
Existing Infrastructure Damage (\$)	Damage Rating	Future Infrastructure Damage (\$)	Damage Rating	Identified as FDEP Critically Eroded Area	FDEP Range Monuments
▼	▼	▼	▼	▼	▼
\$5,000	Low	\$67,000	Low		
\$17,699,000	Med	\$44,639,000	Med-High		
\$491,000	Low	\$1,223,000	Low	X	R065.2-R067
\$20,000	Low	\$58,000	Low	X	R001-R004
\$3,441,000	Low-Med	\$12,119,000	Med		





Focus Area Action Strategies (FAAS)

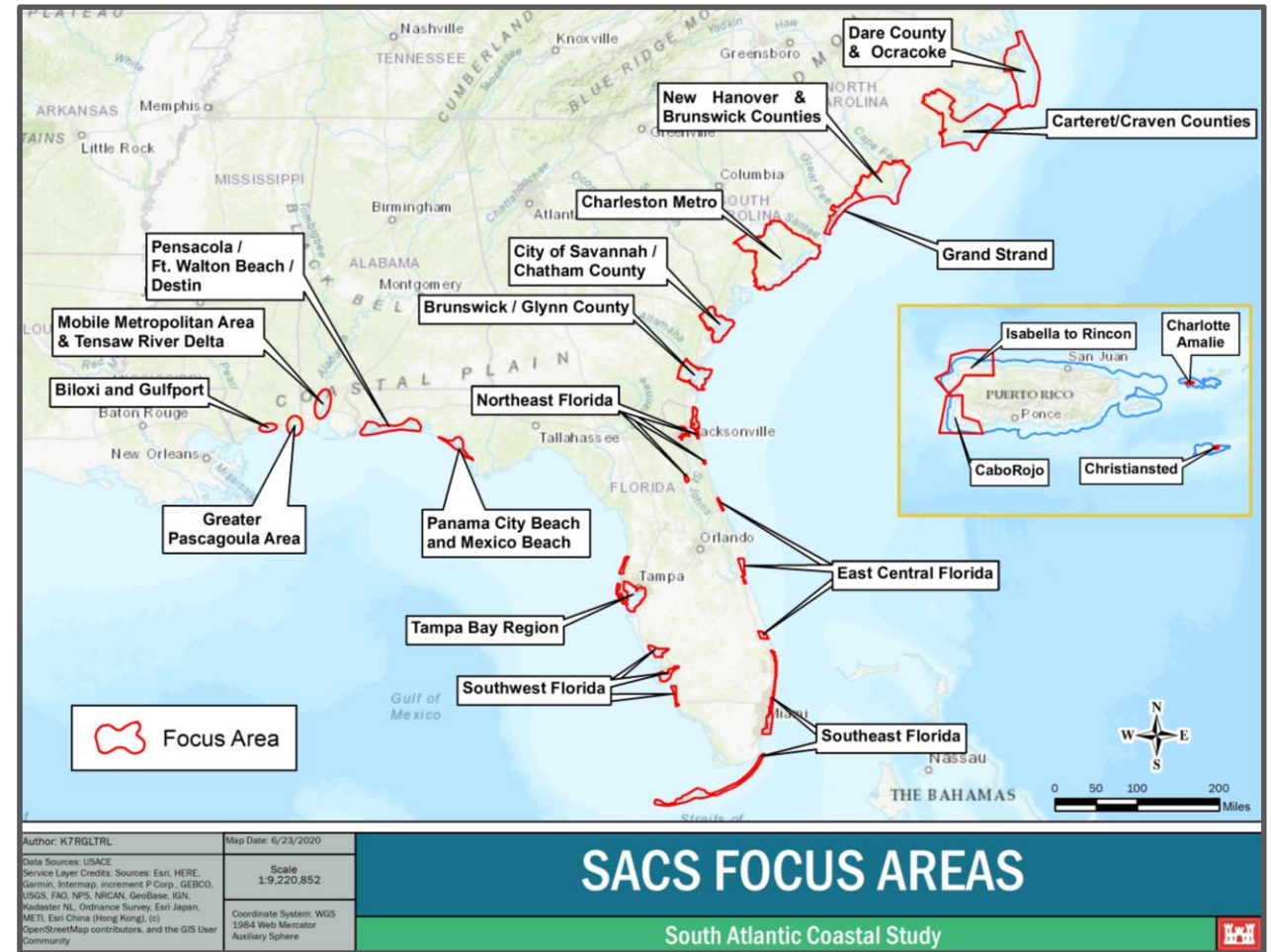


- **Focus Areas:**

- Geographic areas of identified high risk based on Tier 1 Assessment and input from stakeholders at 2019 Field Workshops
- At least one per state/territory

- **FAAS:**

- Actionable risk reduction strategies developed with stakeholders using SACS products and other resources
- Will serve as examples of how vulnerabilities in other high-risk locations can be addressed





FAAS Workshop Schedule



FAAS Workshops will consist of three webinars per focus area:

July 6 -17

1. Kick-Off (90 mins)

- **Focus Area Details**
- **Shared Vision Statement for Focus Area**
- **Preparation for Strategy Development Workshop**

August

2. Strategy Development Workshop (3-4 hours)

- **Step through Framework**
- **Review Tier 2 Results**
- **Develop Action Strategies**

Sept/Oct

3. Wrap-up (1 hour)

- **Go over actions and input into overall strategy**
- **Gather input before finalization**



Final U.S. Fish and Wildlife Service SACS Planning Aid Report, April 2020

- State-by-state descriptions of national wildlife refuges and biological resources and habitats vulnerable to sea level rise and storm activity in the SACS study area
- Adaptation strategies added to final report
- Information from the report will be used in SACS state appendices and in the SACS environmental assessment
- Report located on SACS website at <https://www.sad.usace.army.mil/SACS/>



Southeast region USFWS refuge properties and military installations within SACS boundary (peninsular FL)



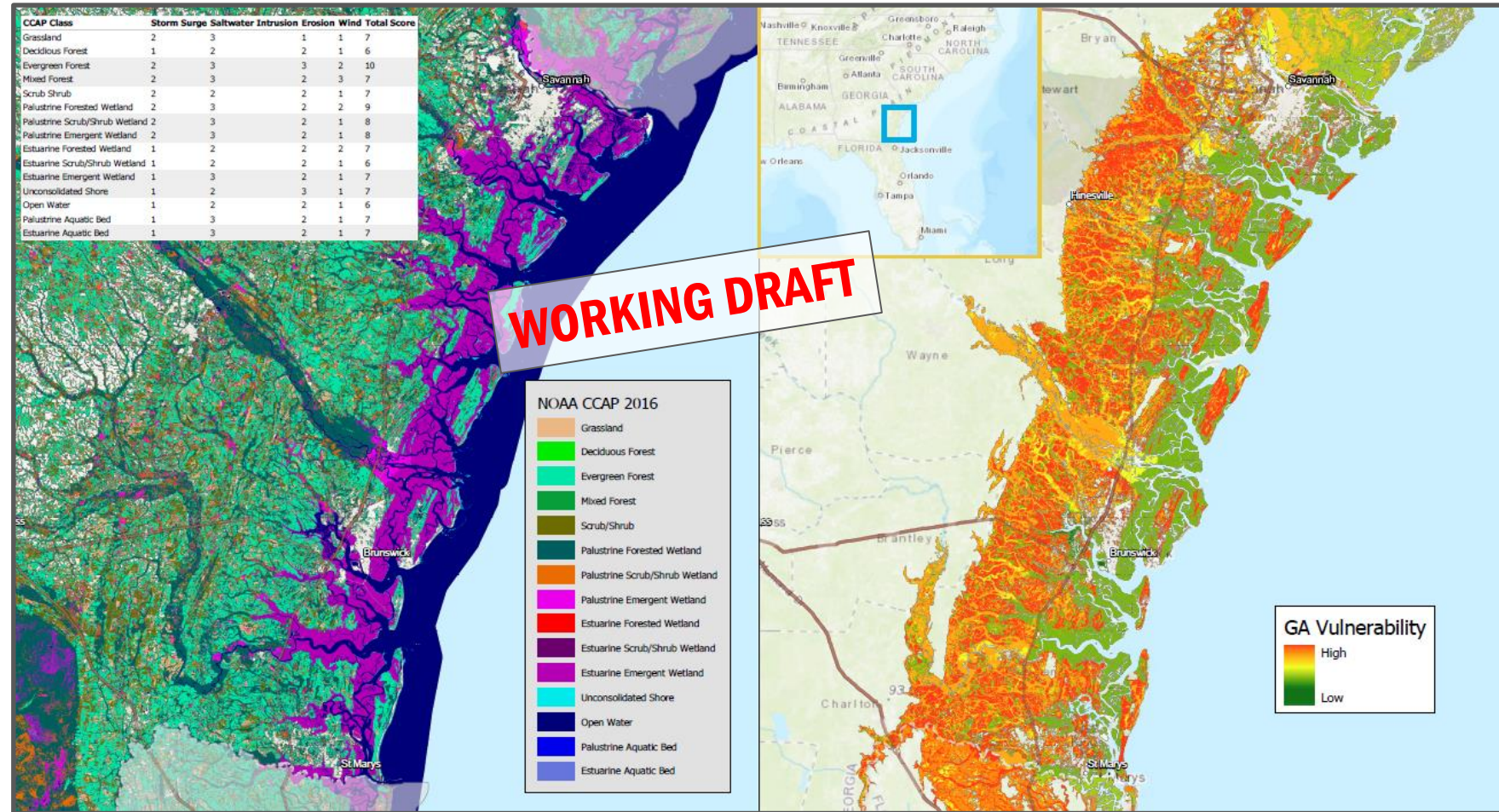
Final U.S. Fish and Wildlife Service SACS Planning Aid Report, April 2020

Adaptations for Resilience



- Winyah-Sewee Conservation and Resiliency Planning Project recommendations include expansion and connection of protected areas at the Cape Romain National Wildlife Refuge (NWR).
- Research and monitoring of the mangrove ecosystem at the J.N. “Ding” Darling NWR to identify changes resulting from sea level rise and whether mangroves are adapting to the changes.
- Partnership between the USFWS, The Conservation Fund and the Alabama Department of Conservation and Natural Resources to add 470 acres of coastal habitat to the Bon Secour NWR that were under threat to development.

- Purpose is to identify natural areas at risk to increased coastal storm damages as a result of sea level rise and to develop risk-reduction strategies for the high-risk areas
- Scored vulnerability of natural areas to coastal storm hazards
- Currently in process of assessing vulnerability maps and identifying high-risk natural areas



DRAFT Environmental Vulnerability Map - Georgia



SACS Cultural Resources Assessment

- Qualitative analysis to identify cultural and archeological resources at risk to increased coastal storm damages as a result of sea level rise.

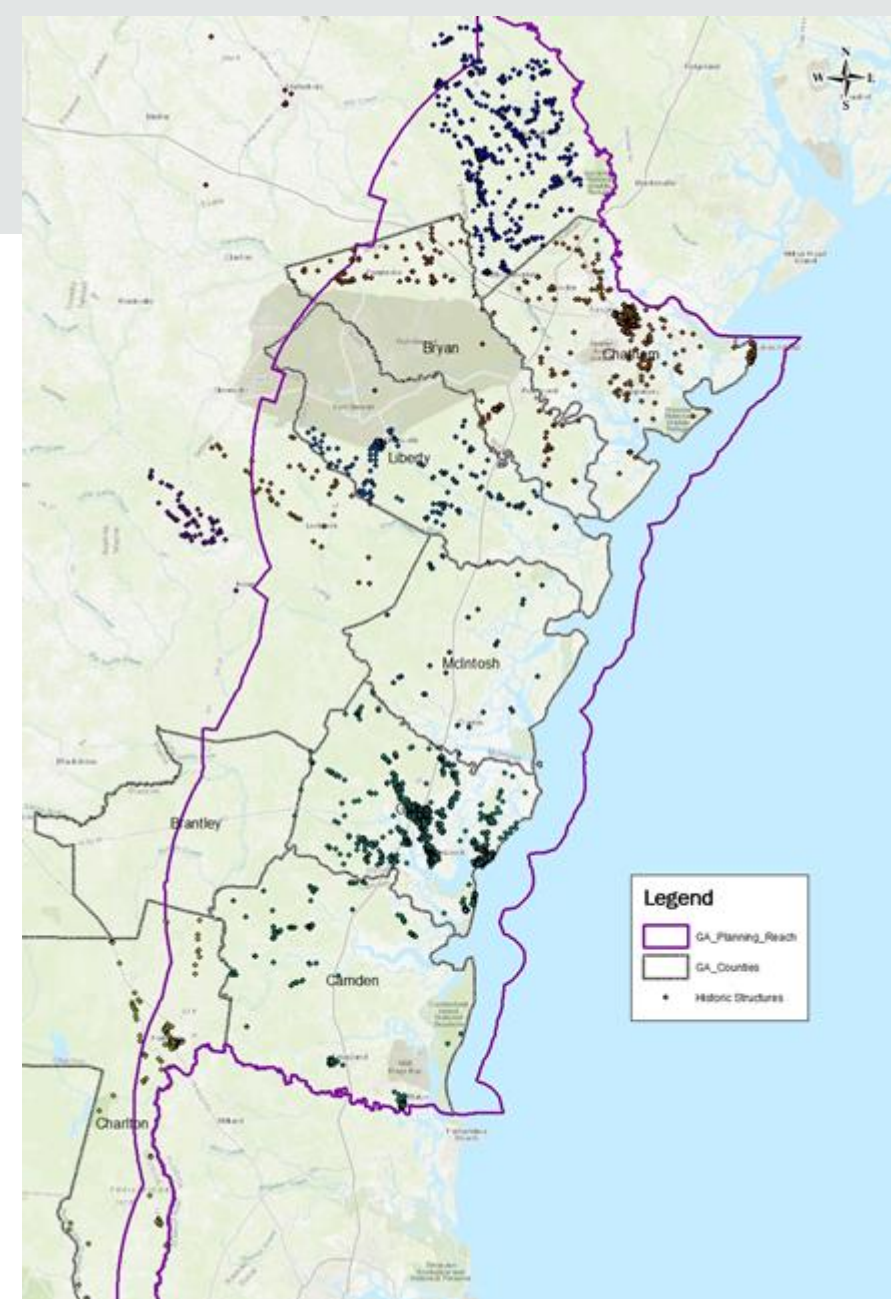
Example Findings:

❖ Guana Tolomato Matanzas National Estuarine Research Reserve and Fort Matanzas sites at risk to erosion:

- 61 recorded archeological sites
- Minorcan Well and other archaeological resources adjacent to the Tolomato River
- Fort Matanzas National Monument

❖ Sapelo Island, GA

- Culturally-significant Hog Hammock Community located at a low elevation on the south side of the island is susceptible to flooding from coastal storm surges that will worsen with sea level rise.



Historic Resources recorded in Georgia's Natural, Archaeological and Historic Resources GIS database located in Georgia Reach 05



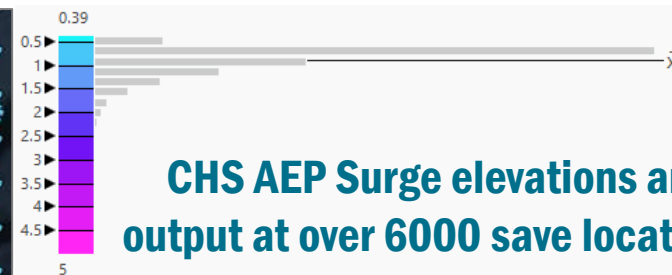


PCHA - Coastal Hazard System Puerto Rico / USVI



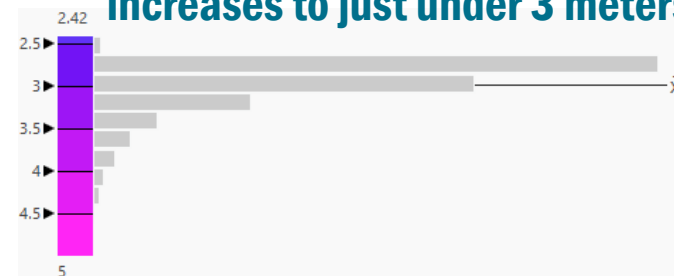
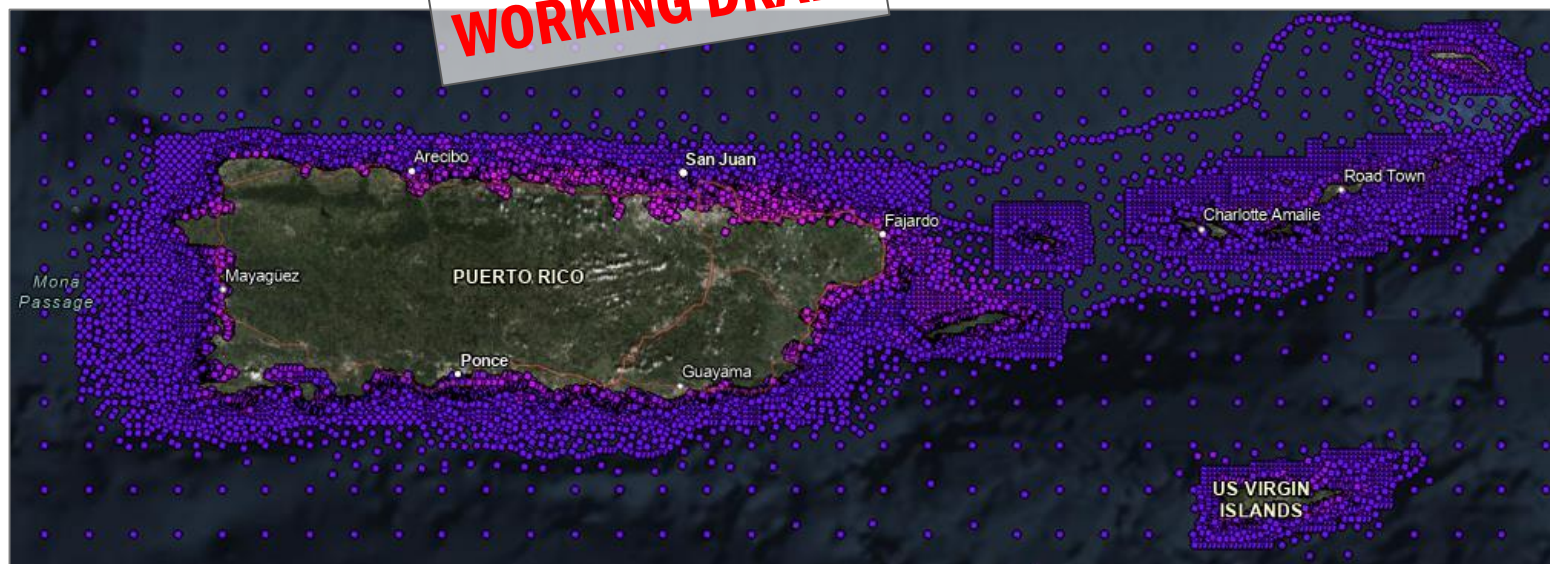
100-yr
Storm
WSE (m)

- ≤ 0.5
- ≤ 1.0
- ≤ 1.5
- ≤ 2.0
- ≤ 2.5
- ≤ 3.0
- ≤ 3.5
- ≤ 4.0
- ≤ 4.5
- ≤ 5.0



CHS AEP Surge elevations are output at over 6000 save locations for Puerto Rico and USVI to inform future studies of expected WSEs under SLR conditions

Under Present Day conditions, the median surge elevation for save locations in PR and USVI is approximately 1 meter. Under 2.13 meters of SLR (USACE High @ 2120), the median surge elevation increases to just under 3 meters.



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PCHA - Coastal Hazard System Puerto Rico / USVI



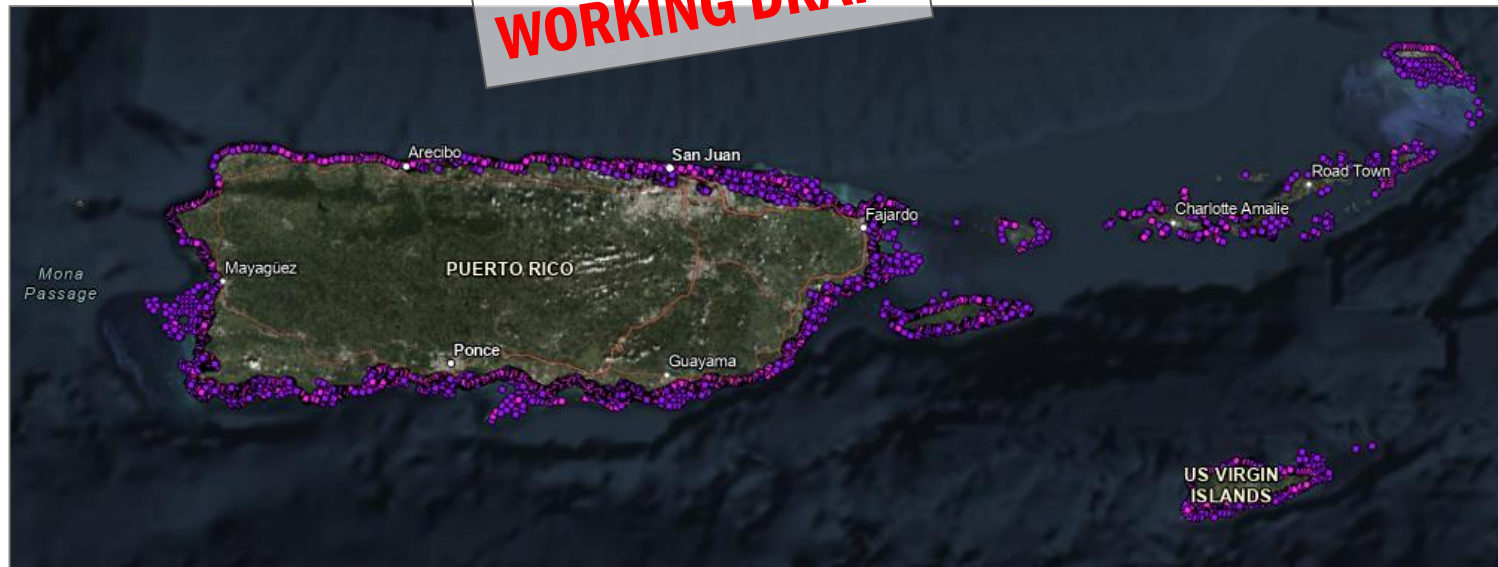
Additional 100-yr Storm Surge

(100 yr WSE SLC_2 - 100yr WSE present - 2.1 ft SLR (m))

D_100_SLC_2_0_min_eus

- ≤ 0.25
- ≤ 0.50
- ≤ 0.75
- ≤ 1.00
- ≤ 1.25

Amplification of storm surge will exist along the North Coast of Puerto Rico and in some areas of STT and STJ in excess of additional inundation due to SLC, alone.



Increase Hs

(100 yr Hs SLC_2 - 100yr Hs existing (m))

DEL_Hs_2_0

- ≤ 0.27
- ≤ 0.66
- ≤ 1.08
- ≤ 3.82

Under Future SLC conditions (USACE High Curve @ 2120) Storm wave heights will increase in excess of 1 meter island-wide for Puerto Rico and USVI



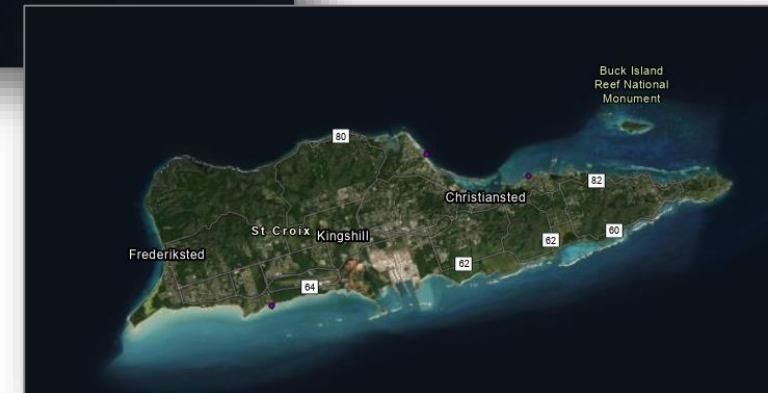
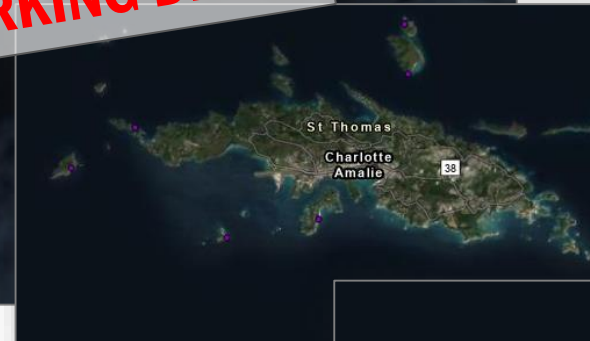
PCHA - Coastal Hazard System Puerto Rico / USVI



Delta H_s^2
(100 yr H_s^2 SLC_2 -
100 yr H_s^2 existing) m^2

DEL_HE_2_0

- ≤ 2.9
- ≤ 5.8
- ≤ 8.8
- ≤ 11.7
- ≤ 14.6

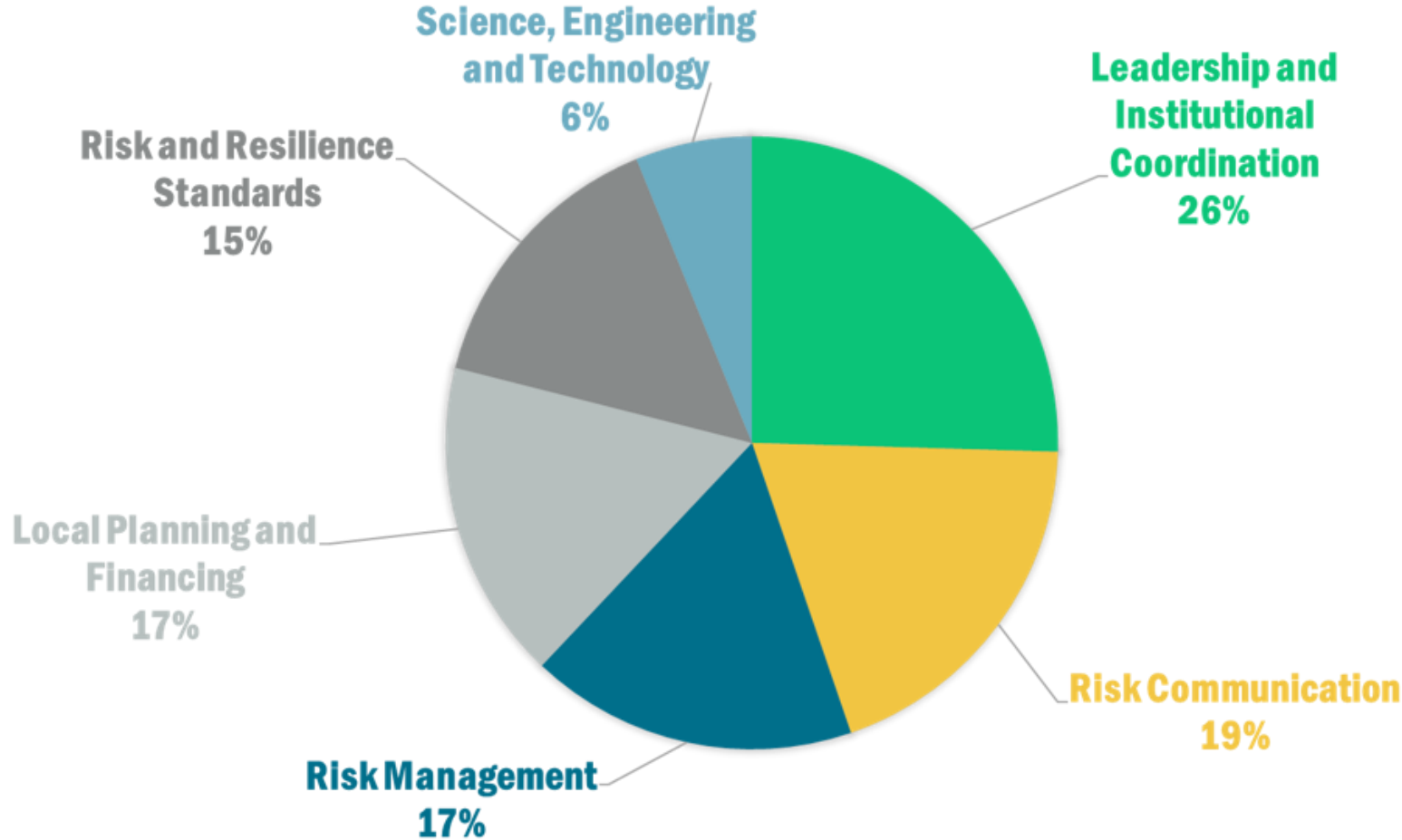


Examination of the difference in wave energy ($\propto H^2$) from the Present Day 100-Year Significant Wave Height to the Future with SLR (USACE High Curve at 2120 = 2.13 m) shows that the northern coast of Puerto Rico, from Carolina west through the Rincon Region as well as the South Eastern portion of PR will be exposed to a significant increase in Wave Energy. Similarly, there are regions throughout STT and STJ that will be subject to significant increases in wave energy under Sea Level Rise.

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Institutional and Other Barriers Report

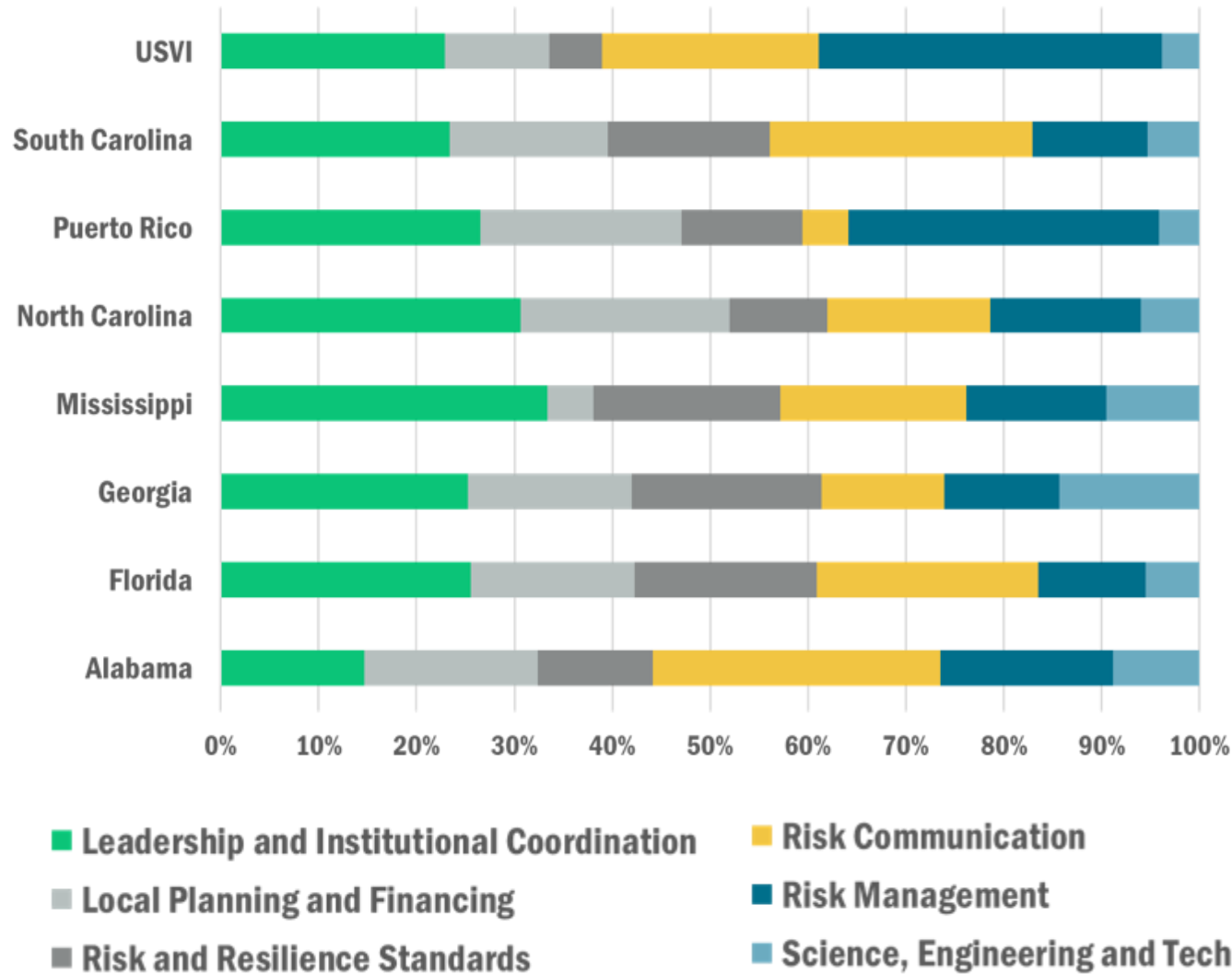


Top 5 Identified Sub-Themes

- Need for coordination and leadership at all levels
- Lack of funding
- Lack of political will to make hard decisions about long-term solutions
- Lack of capacity and capability at the local/state level
- Public acceptability of risk management measures



Institutional and Other Barriers Report



Top 5 Stakeholder Recommendations to Address Barriers

- Impose stricter building/development requirements
- Provide dedicated and continuous proactive funding for pre-disaster, mitigation projects
- Update codes and standards to account for climate change
- Enforce the existing regulations already in place
- Floodplain management policies should be strengthened



District Updates



Wilmington District Update (North Carolina)

Brennan.J.Dooley@usace.army.mil

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Wilmington District Update

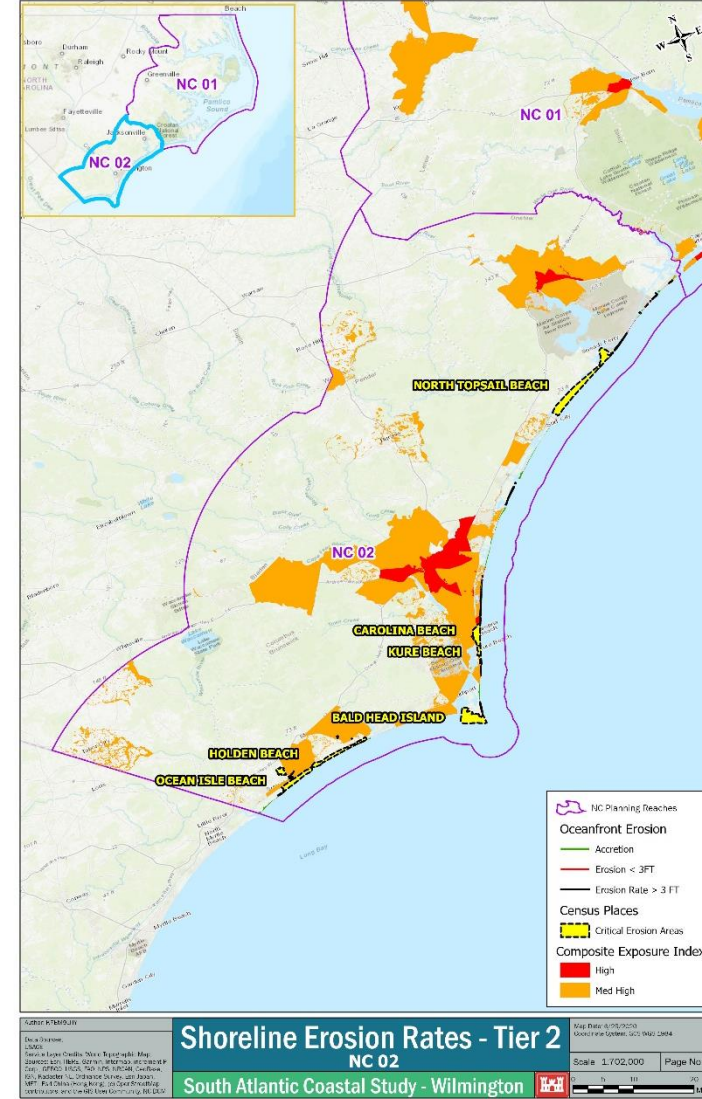


STATUS:

- **Sept 2019 – Stakeholder Workshop Meetings**
- **Nov 2019 – Drafted Focus Areas**
- **Dec 2019 – Drafted Tier 1 Risk Analysis**
- **Mar 2020 – Drafted Tier 2 Risk Analysis**
- **Jun 2020 – Revised Draft State Appendix**
- **Jun 2020 – SAND Stakeholder Workshop**

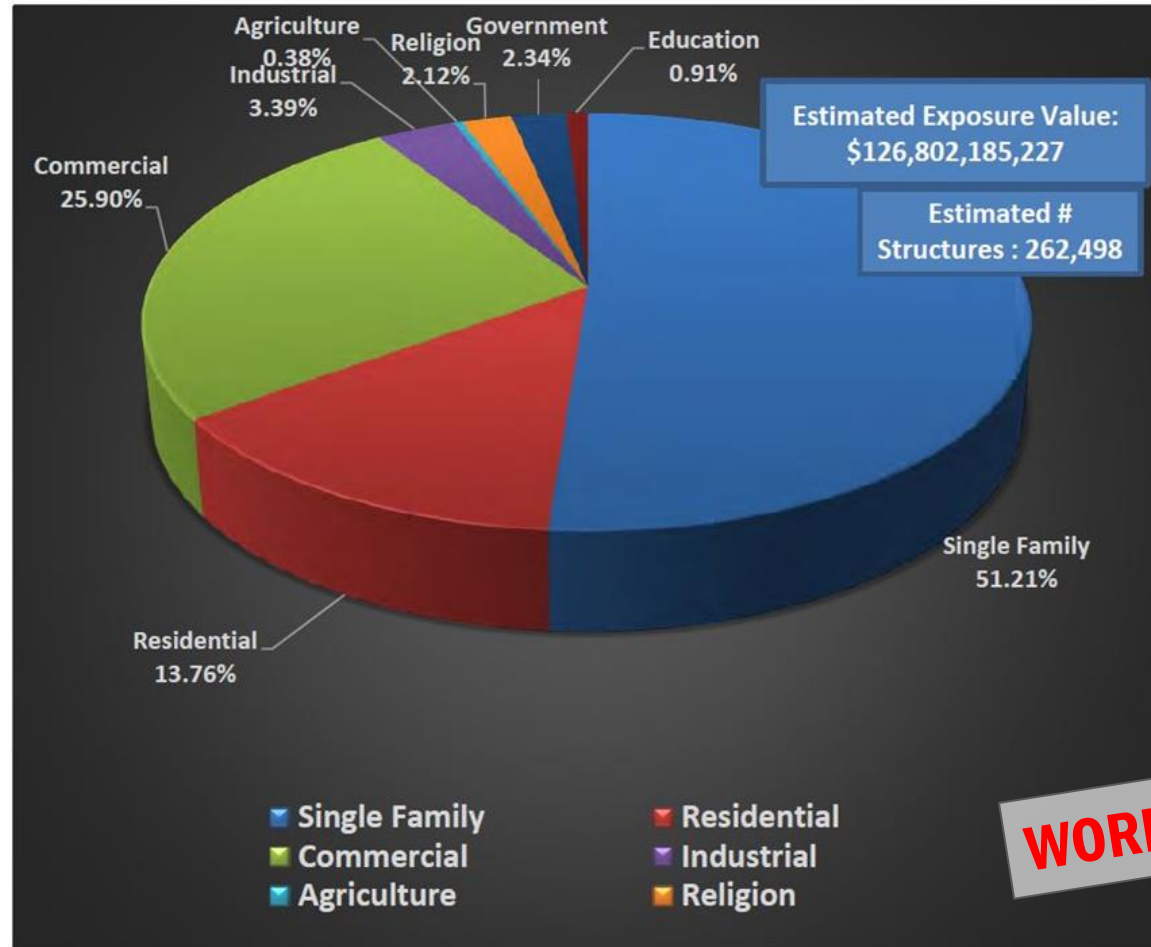
WAY AHEAD:

- **Tier 2 – Evaluate vulnerable environmental and cultural resources with federal and state agencies**
- **Focus Area Action Strategies Meetings (3)**
 - **Dare County / Outer Banks– July 15, 2020**
 - **Carteret / Craven Counties – July 16, 2020**
 - **New Hanover / Brunswick Counties - July 17, 2020**

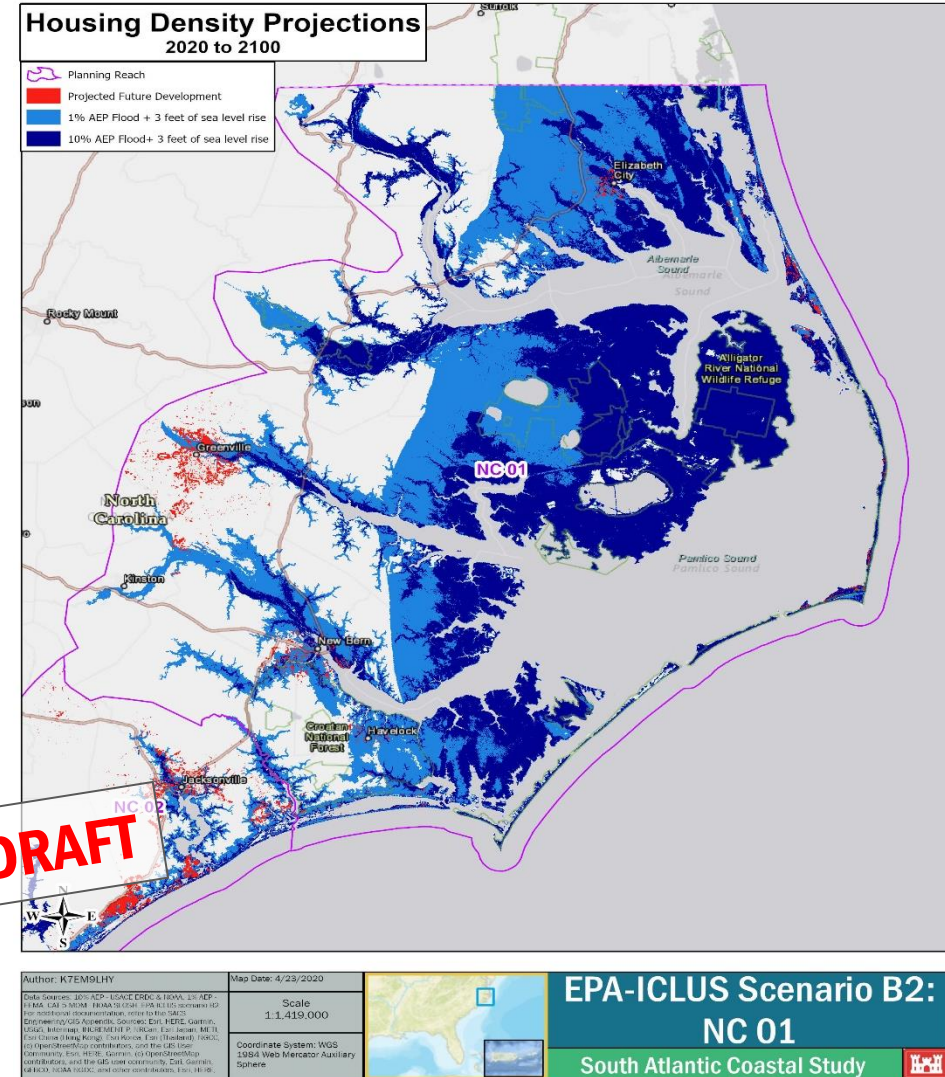




Wilmington District Update



(NSI data)



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Charleston District Update (South Carolina)

Diane.Perkins@usace.army.mil

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Charleston District Update



Tier 1, Status: T1 draft

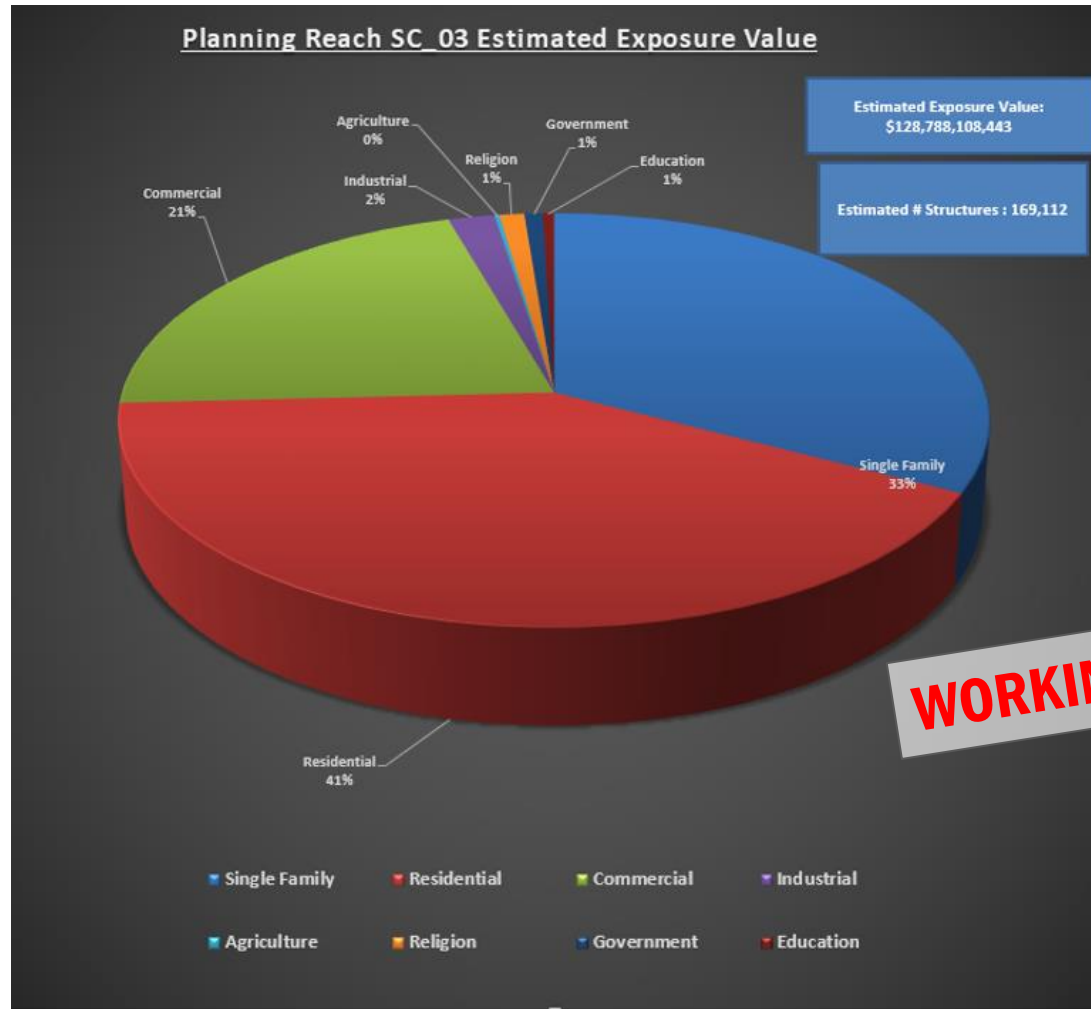
South Carolina High Risk Locations			Tier:	Tier 1		Tier 2				
			Method:	Tier 1 Risk Assessment		Hazus (Level 1)			SCDHEC	
				Hazard is inundation. Exposure is composed of population, infrastructure, environmental and cultural resources, habitat, and social vulnerability.		Hazard is inundation. Exposure is composed of infrastructure.			Source: Erosion Reports for State Beachfront Jurisdictional Lines	
SACS Planning Reach	County	Census Place or Location Name	State	Identified as Existing High Risk Location	Identified as Future High Risk Location	Damage (\$)	Damage Rating	Future Infrastructure Damage (\$)	Damage Rating	Erosion Greater than 5 FT/YR
NUMBER OF HIGH RISK PLACES ID'D IN TIER 1 ANALYSES										
32 Tier 1 Existing Med-High to High Risk										
3 Tier 1 Additional Future Med-High to High Risk										
35 Tier 1 ALONE SUBTOTAL/TOTAL										
SC_04	Beaufort	Hilton Head Island	SC			\$313,723,000	High			x
SC_04	Beaufort	Port Royal	SC			\$21,752,000	Med-High			
SC_04	Beaufort	Beaufort	SC			\$14,811,000	Med			
SC_04	Berkeley	Hanahan	SC			\$9,925,000	Med			
SC_04	Charleston	Mount Pleasant	SC			\$300,038,000	High			
SC_04	Charleston	Charleston	SC			\$349,472,000	High			
SC_04	Charleston	North Charleston	SC	X	X	\$21,868,000	Med-High	\$47,461,000	High	
SC_04	Charleston	Folly Beach	SC	X	X	\$16,848,000	Med	\$30,140,000	Med-High	x
SC_04	Charleston	Sullivan's Island	SC	X	X	\$6,600,000	Low-Med	\$15,440,000	Med	
SC_04	Charleston	Isle of Palms	SC	X	X	\$6,284,000	Low-Med	\$26,410,000	Med-High	
SC_04	Charleston	James Island	SC	X	X	\$9,444,000	Med	\$28,913,000	Med-High	
SC_03	Georgetown	Murrells Inlet	SC	X	X	\$6,095,000	Low-Med	\$12,824,000	Med	
SC_03	Georgetown	Georgetown	SC	X	X	\$2,300,000	Low	\$9,407,000	Med	
SC_03	Georgetown	Litchfield / Pawleys / Debordieu	SC	n/a	n/a	\$36,237	Med-High	\$76,572	High	x
SC_03	Horry	North Myrtle Beach	SC	X	X	\$30,340,000	High	\$55,423,000	High	
SC_03	Horry	Garden City	SC	X	X	\$6,900,000	Low-Med	\$16,183,000	Med	
SC_03	Horry	Socastee	SC	X	X	\$5,997,000	Low-Med	\$14,076,000	Med	
SC_03	Horry	Little River	SC	X	X	\$4,832,000	Low-Med	\$7,765,000	Med	



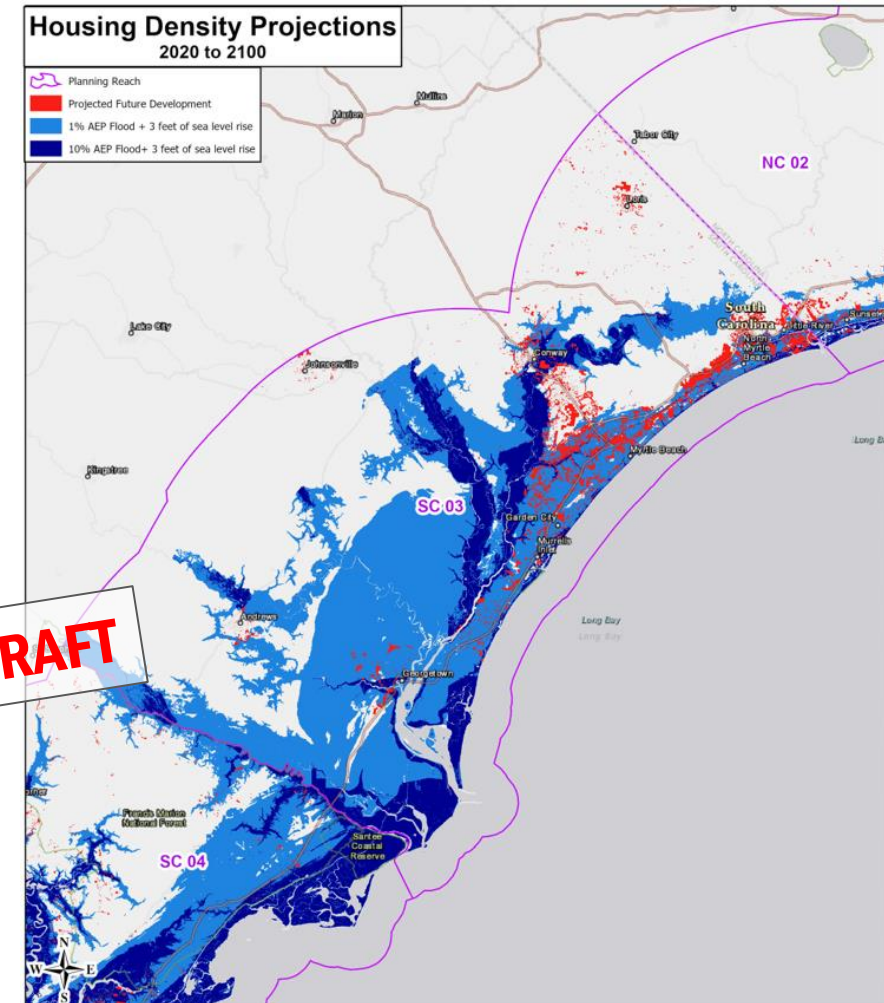
Charleston District Update



Tier 2, Preliminary Findings: SC03 Population and Infrastructure Exposure



Existing (uses NSI data)



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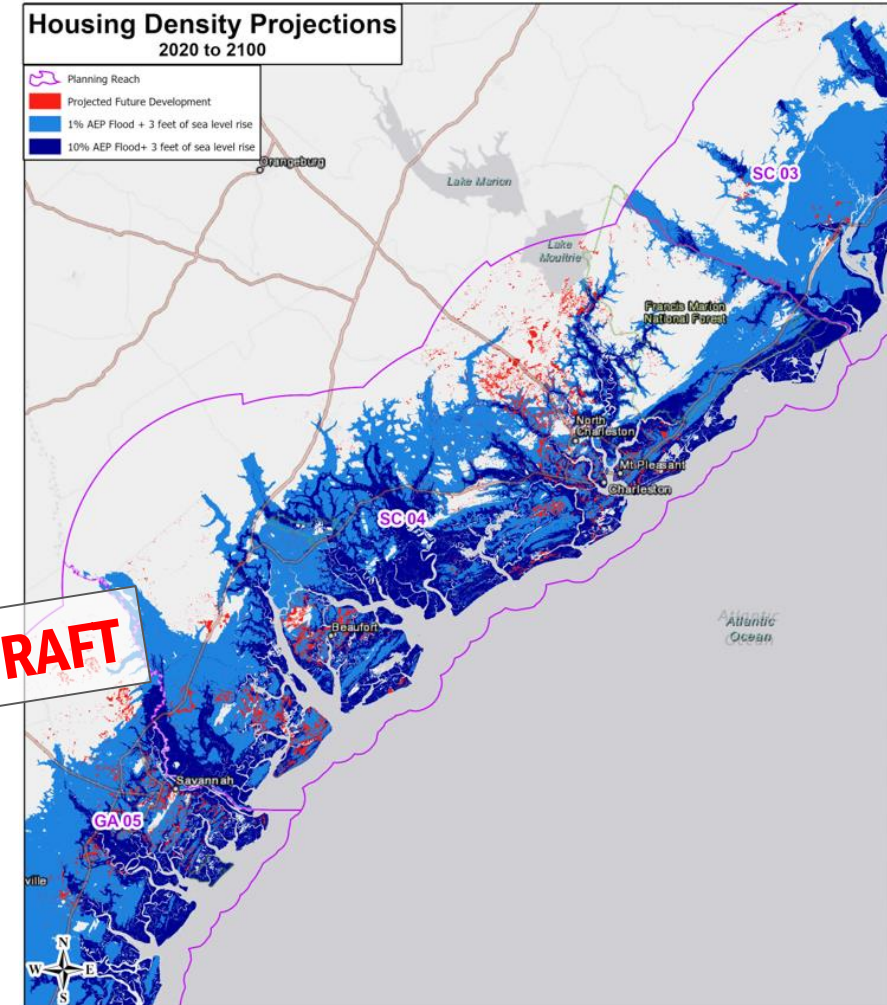
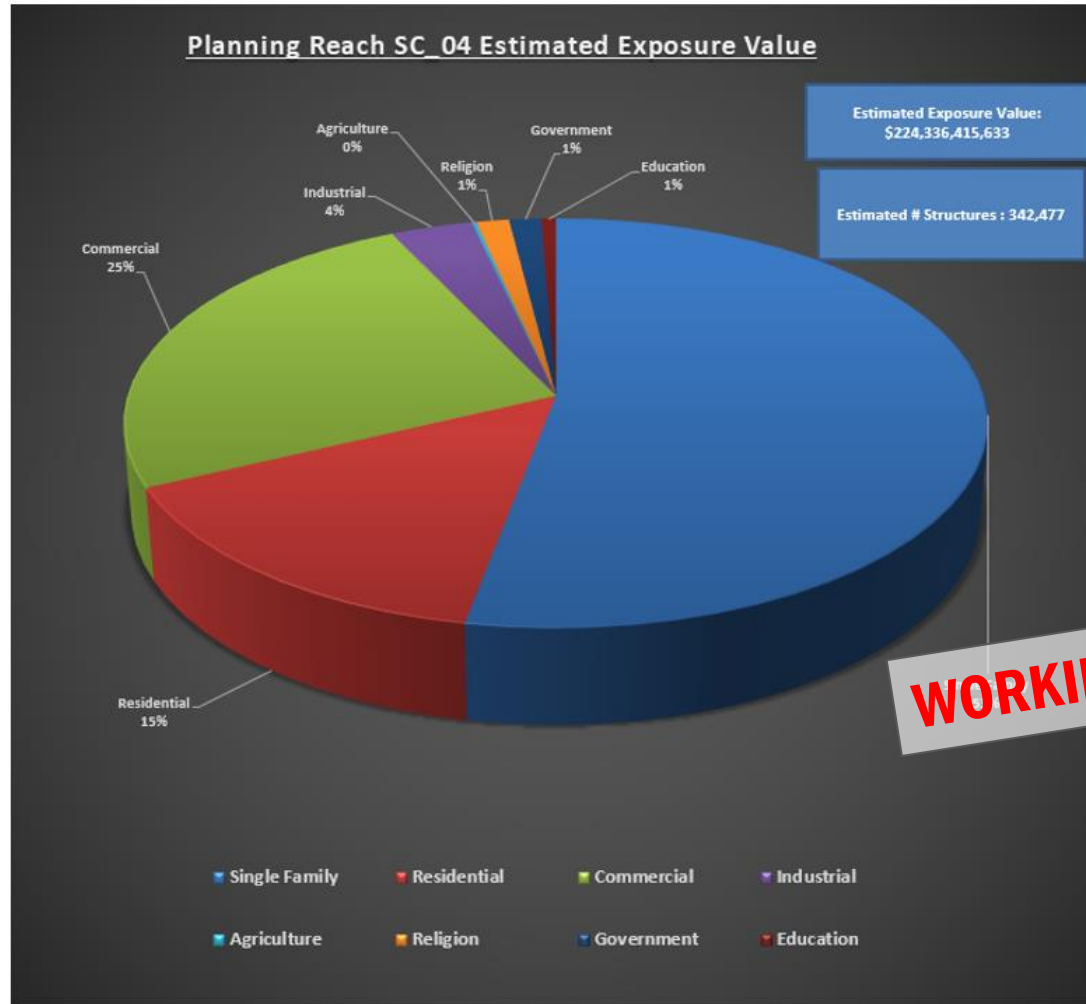
Future (uses EPA data)



Charleston District Update



Tier 2, Preliminary Findings: SC04 Population and Infrastructure Exposure



WORKING DRAFT

Existing (uses NSI data)

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Future (uses EPA data)



Charleston District Update



Tier 2, Status: T2 Hazus & Erosion draft

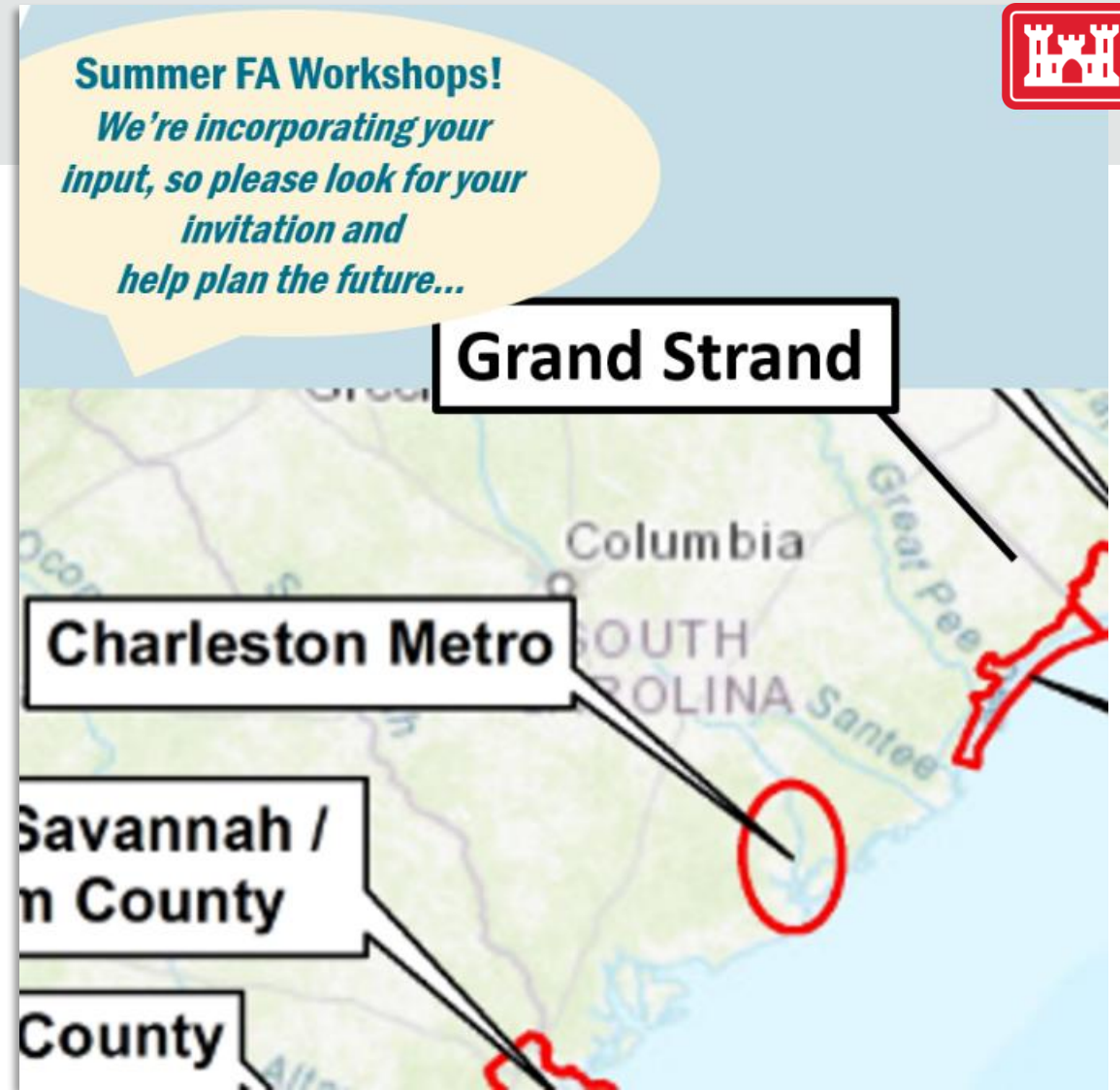
South Carolina High Risk Locations				Tier:	Tier 1		Tier 2			
				Method:	Tier 1 Risk Assessment		Hazus (Level 1)		SCDHEC	
					Hazard is inundation. Exposure is composed of population, infrastructure, environmental and cultural resources, habitat, and social vulnerability.		Hazard is inundation. Exposure is composed of infrastructure.		Source: Erosion Reports for State Beachfront Jurisdictional Lines	
SACS Planning Reach	County	Census Place or Location Name	State	Identified as Existing High Risk Location	Identified as Future High Risk Location	Existing Infrastructure	Damage Rating	Future Infrastructure	Damage Rating	Erosion Greater
WORKING DRAFT NUMBER OF HIGH RISK PLACES ID'D IN TIER 2 ANALYSES (SO FAR) 3 Tier 2 Additional Hazus Existing Med-High to High Risk 10 Tier 2 Additional Hazus Future Med-High to High Risk 9 Tier 2 Additional SCDHEC Erosion >5' 22 Tier 2 ALONE SUBTOTAL (so far) 57 Tier 1 & Tier 2 CUMULATIVE TOTAL (so far) 39% are from Tier 2 analyses - nearly doubled already!										
SC_04	Beaufort	Hilton Head Island	SC	X						
SC_04	Beaufort	Port Royal	SC	X						
SC_04	Beaufort	Beaufort	SC	X						
SC_04	Berkeley	Hanahan	SC	X						
SC_04	Charleston	Mount Pleasant	SC	X						
SC_04	Charleston	Charleston	SC	X						
SC_04	Charleston	North Charleston	SC	X						
SC_04	Charleston	Folly Beach	SC	X						
SC_04	Charleston	Sullivan's Island	SC	X						
SC_04	Charleston	Isle of Palms	SC	X						
SC_04	Charleston	James Island	SC	X	X	\$9,444,000	Med	\$28,913,000	Med-High	
SC_03	Georgetown	Murrells Inlet	SC	X	X	\$6,095,000	Low-Med	\$12,824,000	Med	
SC_03	Georgetown	Georgetown	SC	X	X	\$2,300,000	Low	\$9,407,000	Med	
SC_03	Georgetown	Litchfield / Pawleys / Debordieu	SC	n/a	n/a	\$36,237	Med-High	\$76,572	High	x
SC_03	Horry	North Myrtle Beach	SC	X	X	\$30,340,000	High	\$55,423,000	High	
SC_03	Horry	Garden City	SC	X	X	\$6,900,000	Low-Med	\$16,183,000	Med	
SC_03	Horry	Socastee	SC	X	X	\$5,997,000	Low-Med	\$14,076,000	Med	
SC_03	Horry	Little River	SC	X	X	\$4,832,000	Low-Med	\$7,765,000	Med	



Charleston District Update

WAY AHEAD:

- Two (2) Focus Area Action Strategies Locations
 - Grand Strand Area
 - Charleston Metro Area (tri-county)
- Focus Area Action Strategies = July kickoffs, & August workshops
- More Tier 2 workshops
 - Evaluate vulnerable **environmental resources** with federal and state agencies
 - Evaluate vulnerable **cultural resources** with federal and state agencies





Savannah District Update (Georgia)

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Savannah District Update



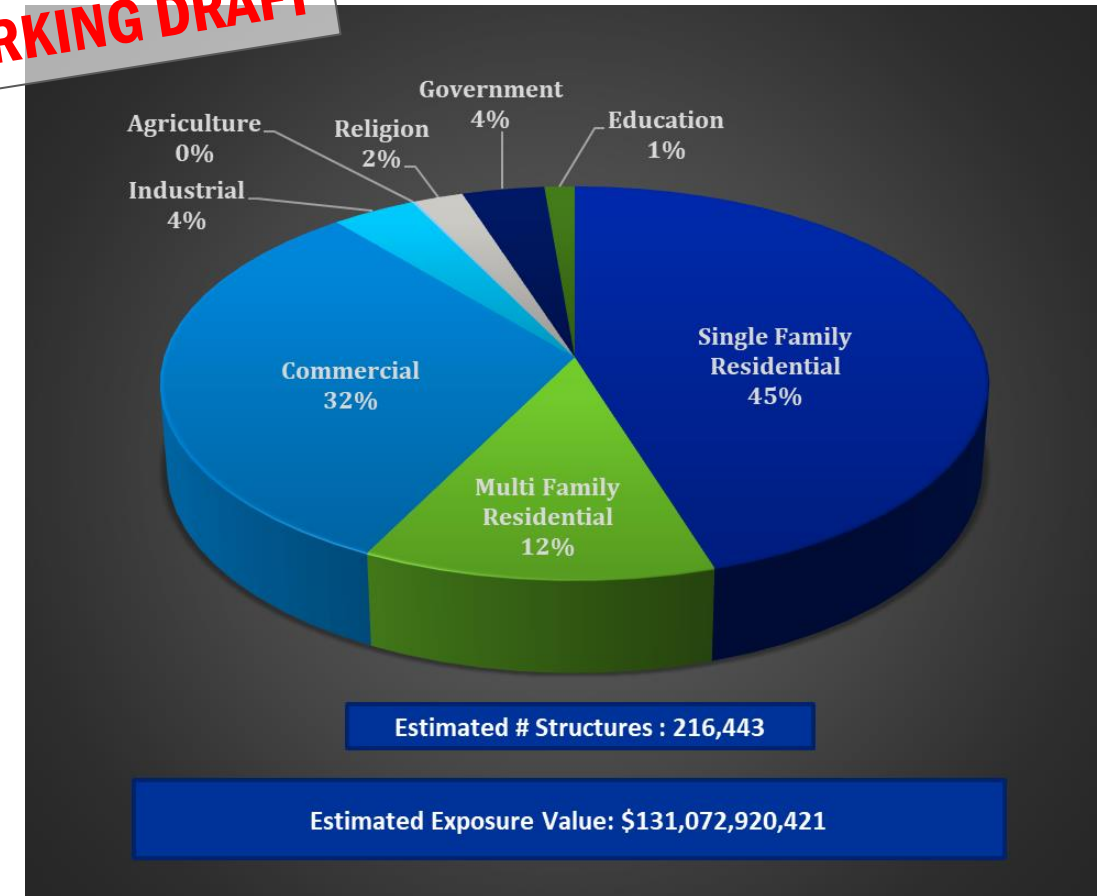
STATUS:

- June 2019 – Met with Tybee Island to discuss performance of Federal CSRM project
- Oct 2019 – GA Face to Face Meeting
- Nov 2019 – Drafted Interim Study Recommendations
- Jun 2020 – Met with SAND stakeholders regarding RSM projects in Georgia

WAY AHEAD:

- Tier 2 – Evaluate vulnerable environmental and cultural resources with federal and state agencies
- Two (2) Focus Areas
- Focus Area Action Strategies Kick Off Meetings
 - July 13, 2020: Glynn Co. / Brunswick / Jekyll Island / St. Simons Island
 - July 14, 2020: Chatham Co. / Savannah / Tybee Island

WORKING DRAFT



Tier 2 Data from the National Structural Inventory (NSI) that is within the footprint of the 1% AEP floodplain plus 3 feet of SLR. The estimated average population at risk (PAR) is approximately 550,000 people.



Savannah District Update



HIGH RISK AREAS:

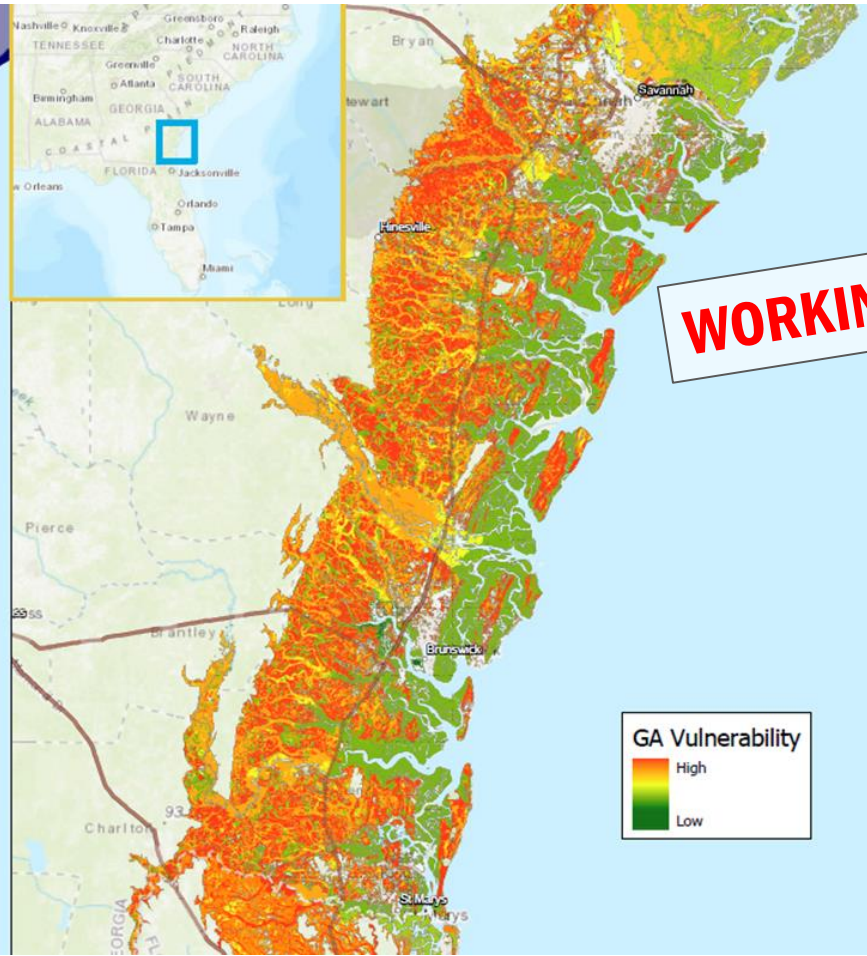
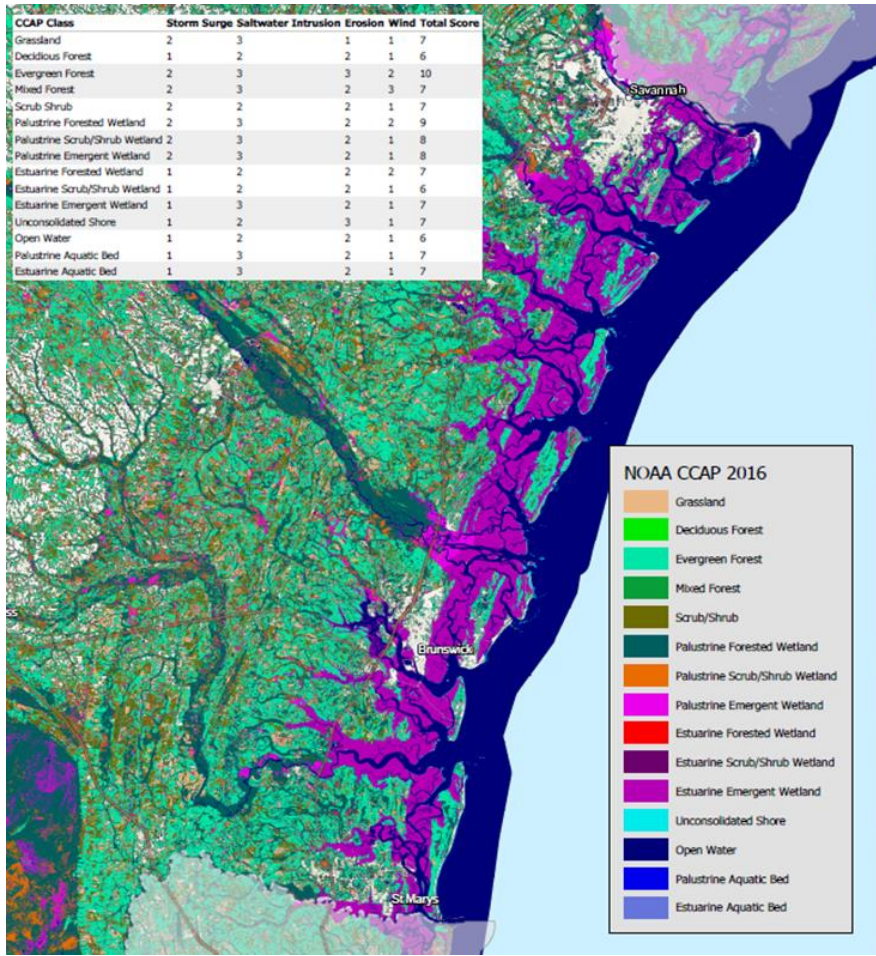
- **Tier 1:**
 - Evaluated the Composite Risk to Populations and Infrastructure (60%), Environmental and Cultural Resources (30%), and Social Vulnerability (10%)
 - Look at vulnerability of environmental and cultural resources and social vulnerability
- **Tier 2 Data Sets:**
 - FEMA HAZUS Flood Model
 - 2013 Hurricane Evacuation Study
 - WHSRN (Western Shorebird Reserve Network)
 - NOAA Fisheries and South Atlantic Fishery Management Council Essential Fish Habitat (EFH)
 - NOAA CCAP classes
 - Resilient Coastal Sites for Conservation in the South Atlantic (The Nature Conservancy)
 - GNAHRGIS (Georgia Natural, Archeological and Historic Resources GIS)
 - Center for Disease Control (CDC) Social Vulnerability Index at the Census Tract Level

Census Place	Existing Asset Risk	Existing Risk Rating	Future Asset Risk	Future Risk Rating
St. Marys	\$4,797,000	Med-High	\$15,688,000	High
Skidaway Island	\$10,455,000	Med-High	\$31,769,000	High
Wilmington Island	\$7,724,000	Med-High	\$25,118,000	High
Savannah	\$7,635,000	Med-High	\$23,912,000	High
Whitemarsh Island	\$6,766,000	Med-High	\$15,976,000	High
Montgomery	\$5,072,000	Med-High	\$11,070,000	High
Tybee Island	\$4,768,000	Med-High	\$11,867,000	High
Georgetown	\$4,725,000	Med-High	\$11,615,000	High
St. Simons	\$17,655,000	High	\$53,731,000	High
Brunswick	\$6,219,000	Med-High	\$20,107,000	High

Tier 2 – HAZUS Medium-High- and High-Risk Locations to populations and infrastructure based on census tracts



Savannah District Update





Jacksonville District Update (Peninsular Florida, Puerto Rico, USVI)

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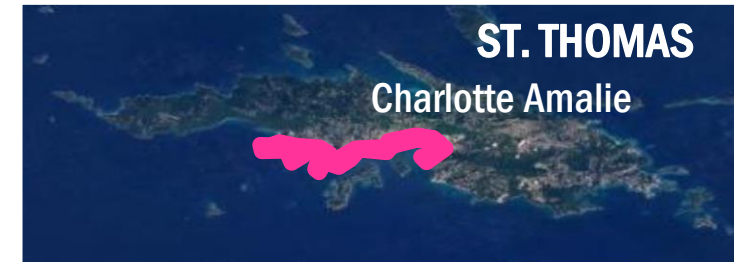
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Jacksonville District Update



- **Appendices & Focus Area Action Strategies Documents underway!**
 - Florida Appendix & 5 Focus Areas
 - Puerto Rico & 2 Focus Areas
 - USVI & 2 Focus Areas
- **Focus Area workshops kicking off in July!**





Jacksonville District Update



FLORIDA

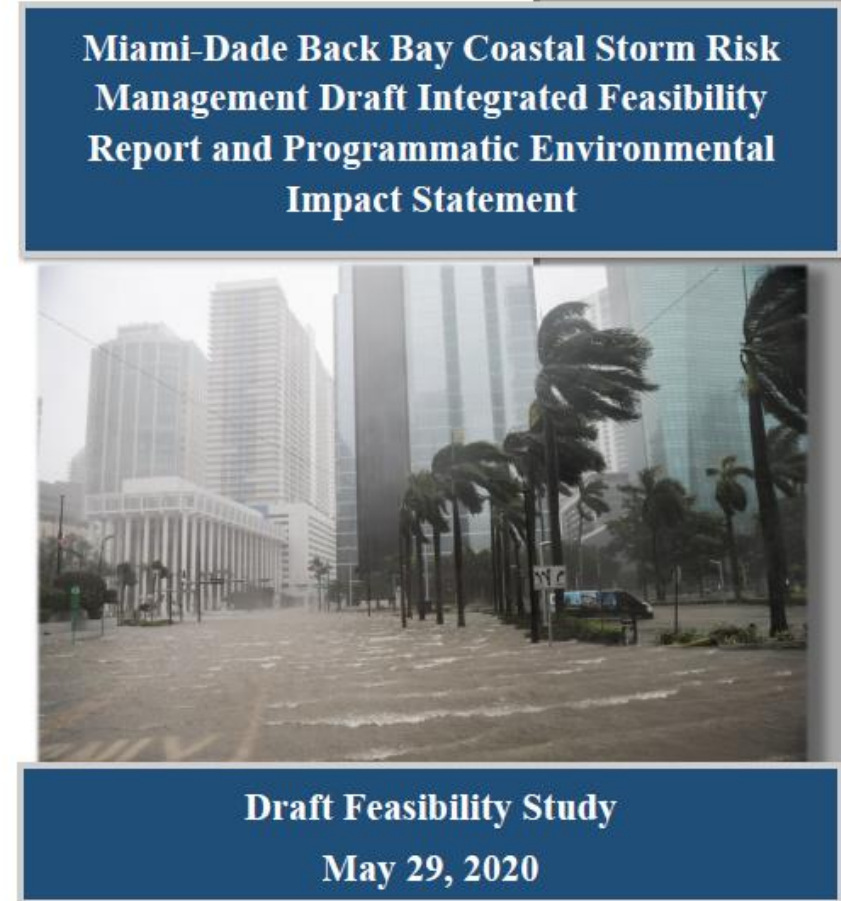
					Tier:	Tier 1		Tier 2					
					Method:	Tier 1 Risk Assessment		Hazus (Level 1)			FDEP Critically Eroded Area		
						Hazard is inundation. Exposure is composed of population, infrastructure, environmental and cultural resources, habitat, and social vulnerability.		Hazard is inundation. Exposure is composed of infrastructure.			Hazard is erosion. Exposure is composed of infrastructure, recreational resources, wildlife habitat, and cultural resources.		
AFFGEOID	SACS Planning Reach	County	Census Place or Location Name	State		Identified as Existing High Risk Location	Identified as Future High Risk Location	Existing Infrastructure Damage (\$)	Damage Rating	Future Infrastructure Damage (\$)	Damage Rating	Identified as FDEP Critically Eroded Area	FDEP Range Monuments
1600000US1232650	FL_12	Dixie	Horseshoe Beach	FL				\$1,104,000	Low-Med	\$1,588,000	Low-Med		
1600000US1215575	FL_12	Dixie	Cross City	FL				\$0	Low	\$0	Low		
1600000US1223050	FL_07	Indian River	Florida Ridge	FL		X	X	\$6,416,000	Low-Med	\$14,410,000	Med		
1600000US1252175	FL_07	Indian River	Orchid	FL		X	X	\$1,973,000	Low	\$5,387,000	Low-Med	X	R033-R037
1600000US1254175	FL_07	Martin	Palm City	FL		X	X	\$12,907,000	Low-Med	\$36,635,000	Med-High		
1600000US1230975	FL_07	Martin	Hobe Sound	FL		X	X	\$7,046,000	Low-Med	\$17,006,000	Med		

- **Tier 1:**
 - 263 Census places are high risk in the existing condition
 - 379 Census places high risk in the future condition with SLR (116 additional places)
- **Through Tier 2:**
 - Hazus identified an additional 43 risk areas
 - Critical Erosion data contributed an additional 57 areas at risk



Jacksonville District Update

- Leveraging between ongoing USACE studies – Multiple Supplemental Coastal Studies in SAJ
- Information Exchange internally & externally!



NT STUDY



precipitation

TILLWATER ELEVATION (SWEL)
ORMAL HIGH TIDE



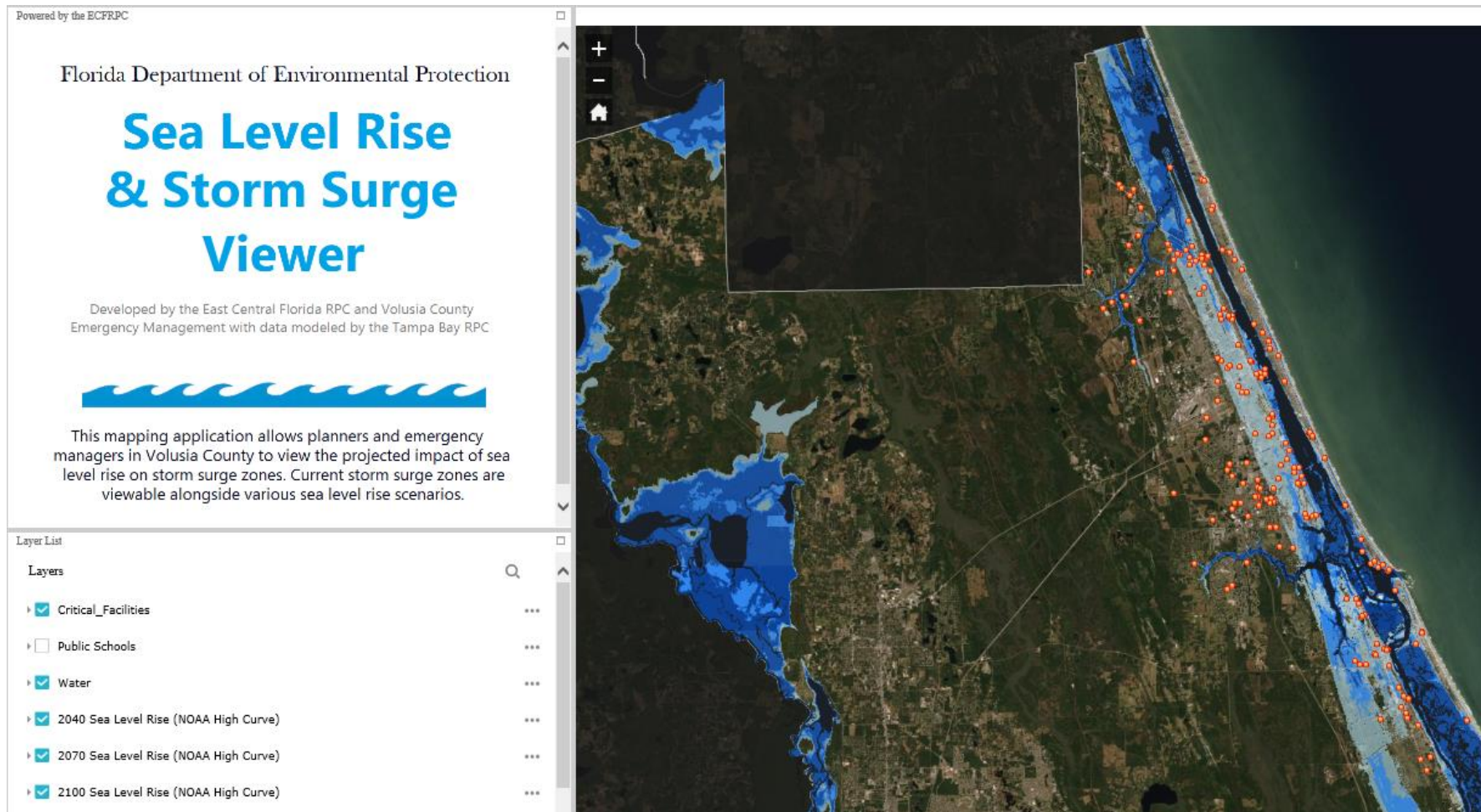
ING STRONG
11



Jacksonville District Update



- Information Exchange internally & externally!





Jacksonville District Update



FLORIDA

FLORIDA						Minimum SLR that would cause out of bank flooding for the evaluated storm surge recurrence, ft						Calendar year when overbank flooding would occur for the evaluated storm surge recurrence under USACE SLR projection Scenarios																	
Structure	Design discharge (cfs)	Design HW (ft-NGVD)	Design TW (ft-NGVD)	C-1 canal bank-full elevation (ft-NGVD)	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	2 yr			5 yr			10 yr			25 yr			50 yr			100 yr			
											SLR Projection			SLR Projection			SLR Projection			SLR Projection			SLR Projection			SLR Projection			
											USAC E Int	USAC E High	NOAA High	USAC E Int	USAC E High	NOAA High	USAC E Int	USAC E High	NOAA High	USAC E Int	USAC E High	NOAA High	USAC E Int	USAC E High	NOAA High	USAC E Int	USAC E High	NOAA High	USAC E Int
S-20F	2,900	1.90	1.40	4.40	0.93	0.63	0.41	0.20	0.00	0.00	2061	2039	2034	2048	2032	2028	2037	2027	2024	2026	2021	2020	2015			2015			
S-20G	900	2.00	1.50	7.00	> 3.0	> 3.0	3.00	2.78	2.68	2.54	>2120	2074	2061	>2120	2074	2061	>2120	2074	2061	>2120	2070	2058	2120	2069	2057	2116	2067	2056	
S-20	450	1.50	1.00	2.50	1.25	1.18	1.12	1.02	0.87	0.78	2074	2046	2039	2044	2044	2038	2069	2043	2036	2065	2041	2035	2058	2038	2033	2055	2036	2031	
S-27	2,800	3.20	3.00	4.50	0.46	0.10	0.00	0.00	0.00	0.00	2040	2019	2015	2021	2018	2017	2015			2015			2015			2015			
S-28	3,220	2.30	1.80	4.20	0.43	0.13	0.00	0.00	0.00	0.00	2040	2019	2015	2021	2018	2017	2015			2015			2015			2015			
S-123	2,300	2.00	1.50	5.93	2.00	1.60	0.93	0.10	0.00	0.00	2100	2059	2049	2086	2052	2043	2061	2039	2034	2021	2018	2017	2015			2015			
S-22	1,915	3.50	2.70	5.00	0.17	0.03	0.00	0.00	0.00	0.00	2025	2020	2019	2017	2016	2016	2015			2015			2015			2015			
S-29	4,680	2.40	1.90	4.40	1.40	1.30	1.16	1.00	0.83	0.67	2079	2048	2041	2075	2046	2039	2070	2044	2037	2064	2041	2035	2057	2037	2032	2050	2033	2029	

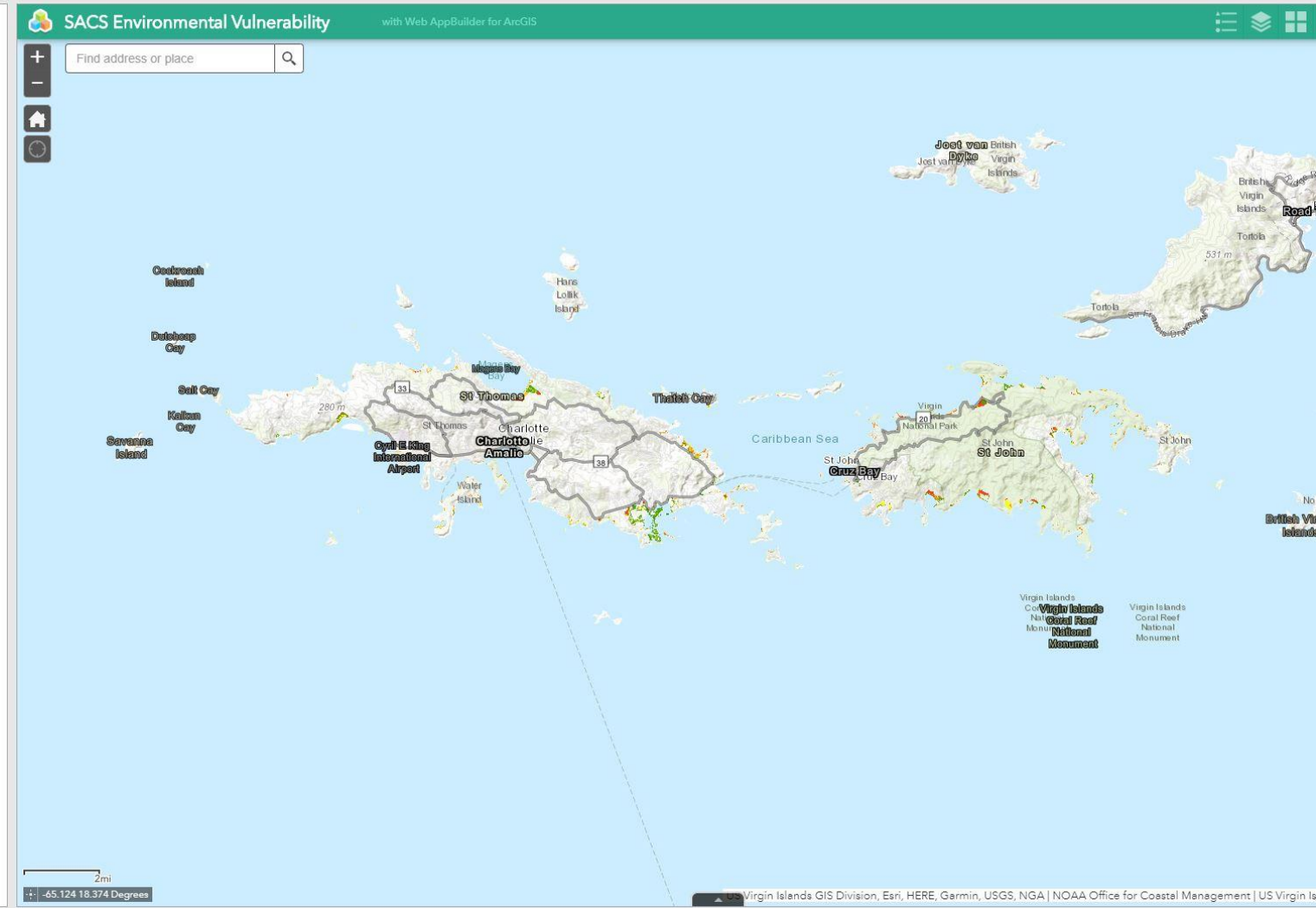
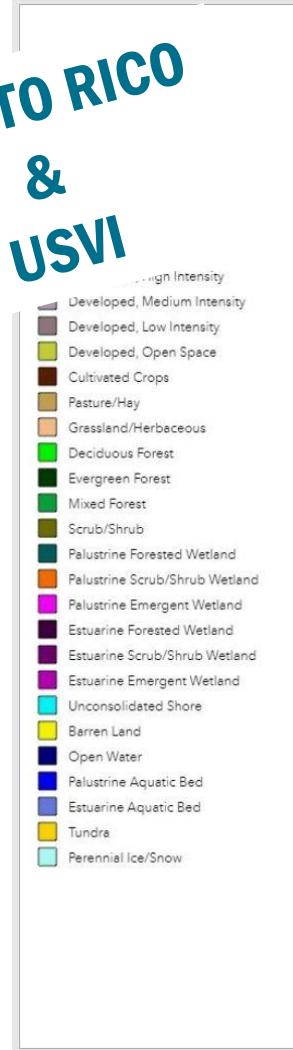
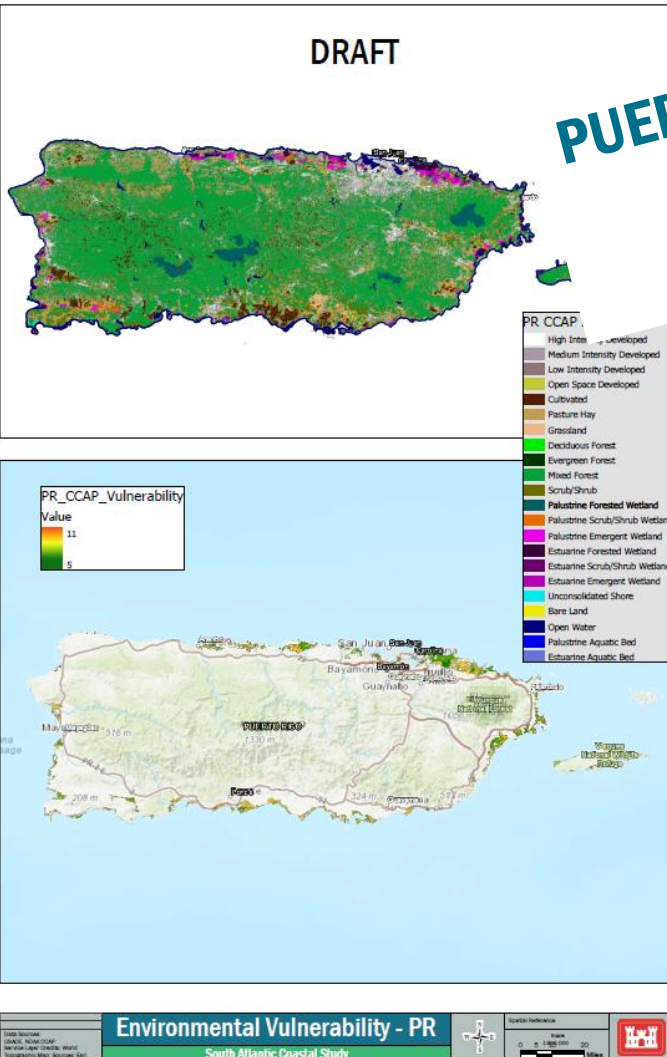
- Tier 2: Evaluation of vulnerability of Tidal Control Structures in SE FL



Jacksonville District Update



• Tier 2: Vulnerable Environmental Resources





Mobile District Update (Alabama, Mississippi, Florida Panhandle)

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Mobile District Update



STATUS:

- **Mar 30, 2020 – Completed Tier 2 Risk Analysis**
- **Jun 17, 2020 – SAND Stakeholder Workshop**

WAY AHEAD:

- **Tier 2 – Evaluate vulnerable environmental and cultural resources with federal and state agencies**
- **Focus Area Action Strategies Meetings (5)**
 - **Gulfport/Biloxi**
 - **Pascagoula**
 - **Western Mobile Bay**
 - **Florida Panhandle (2)**



Mobile District Update



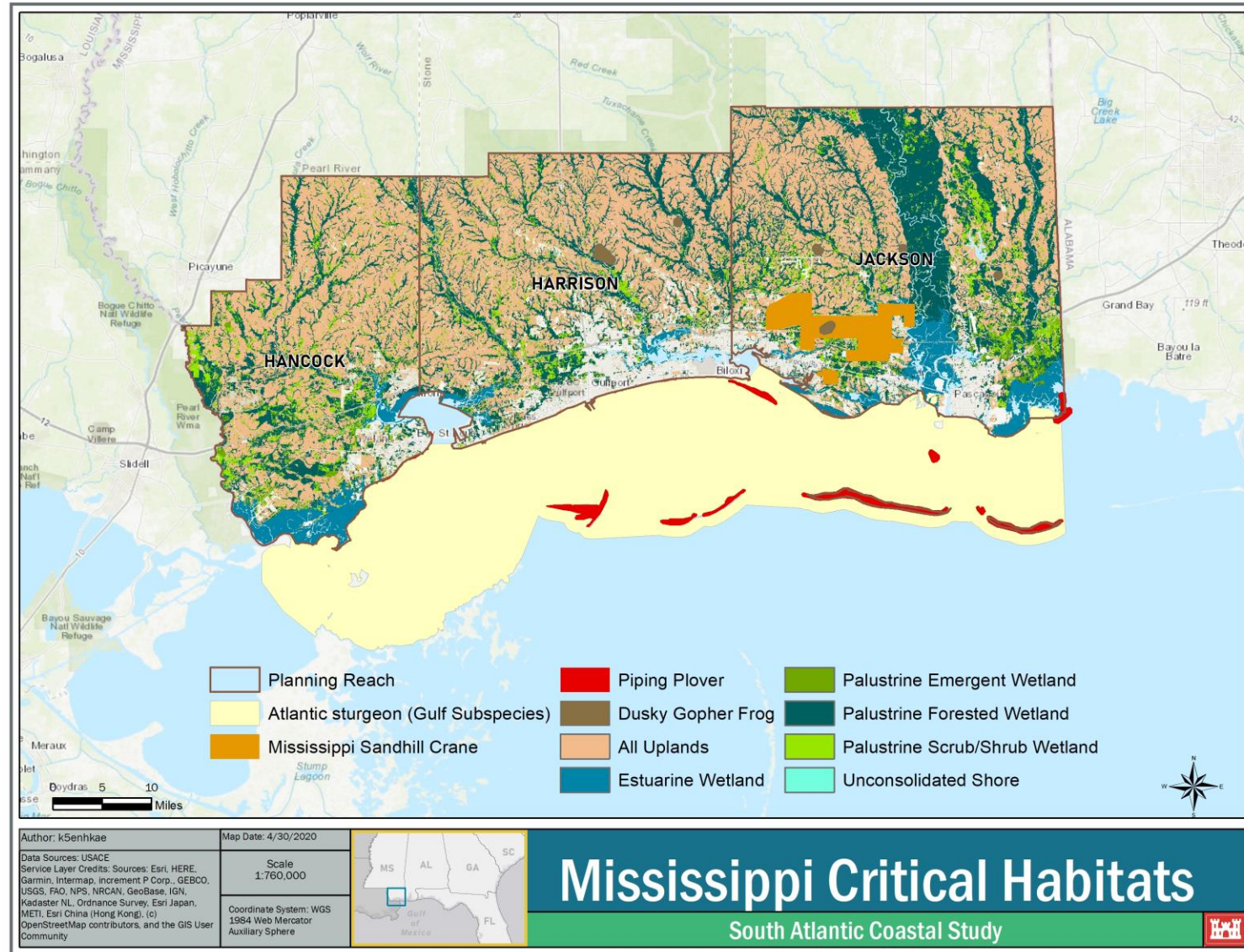
CENSUS PLACES, COUNTIES, & PLANNING REACHES			TIER-1		TIER-2 \$ DAMAGE RISK				
County	Census Place	State	EC Risk Location	FC Risk Location	Existing \$ Damage Risk	Existing Risk	Future \$ Damage Risk	Future Risk	Significant Increase in TIER-2 Risk
Baldwin	Orange Beach	AL	X	X	\$34,342,000	High	\$50,027,000	High	N
Mobile	Mobile	AL	X	X	\$16,495,000	Med-High	\$38,635,000	High	Y
Mobile	Bayou La Batre	AL	X	X	\$4,072,000	Med	\$8,192,000	Med-High	Y
Mobile	Dauphin Island	AL	X	X	\$3,378,000	Med	\$8,130,000	Med-High	Y
Baldwin	Gulf Shores	AL	X	X	\$10,213,000	Med-High	\$26,684,000	High	Y
Walton	Miramar Beach	FL	X	X	\$25,005,000	High	\$50,124,000	High	Y
Okaloosa	Destin	FL	X	X	\$17,212,000	High	\$37,082,000	High	Y
Bay	Upper Grand Lagoon	FL	X	X	\$14,495,000	Med-High	\$28,712,000	High	Y
Bay	Panama City	FL	X	X	\$12,159,000	Med-High	\$26,231,000	High	Y
Okaloosa	Fort Walton Beach	FL	X	X	\$9,935,000	Med-High	\$21,897,000	High	Y
Bay	Lynn Haven	FL	X	X	\$8,434,000	Med-High	\$18,869,000	High	Y
Okaloosa	Niceville	FL	X	X	\$7,911,000	Med-High	\$13,662,000	Med-High	Y
Bay	Callaway	FL	X	X	\$5,162,000	Med	\$9,984,000	Med-High	Y
Escambia	Warrington	FL	X	X	\$3,956,000	Med	\$8,590,000	Med-High	Y
Escambia	Pensacola	FL	X	X	\$3,481,000	Med	\$12,110,000	Med-High	Y
Bay	Pretty Bayou	FL	X	X	\$3,265,000	Med	\$8,014,000	Med-High	Y
Okaloosa	Lake Lorraine	FL	X	X	\$3,078,000	Med	\$6,492,000	Med-High	Y
Okaloosa	Ocean City	FL	X	X	\$3,036,000	Med	\$6,835,000	Med-High	Y
Harrison	Biloxi	MS	X	X	\$31,778,000	High	\$52,337,000	High	Y
Harrison	Gulfport	MS	X	X	\$26,318,000	High	\$45,193,000	High	Y
Jackson	Pascagoula	MS	X	X	\$24,734,000	High	\$59,126,000	High	Y
Hancock	Bay St. Louis	MS	X	X	\$23,392,000	High	\$32,320,000	High	Y
Jackson	Moss Point	MS	X	X	\$19,123,000	Med-High	\$30,502,000	High	Y
Harrison	Pass Christian	MS	X	X	\$15,868,000	Med-High	\$23,529,000	High	Y
Jackson	Gautier	MS	X	X	\$13,729,000	Med-High	\$24,923,000	High	Y
Hancock	Waveland	MS	X	X	\$11,096,000	Med	\$17,760,000	Med-High	Y
Jackson	Gulf Park Estates	MS	X	X	\$10,522,000	Med	\$16,337,000	Med-High	Y
Harrison	D'Iberville	MS	X	X	\$6,291,000	Low-Med	\$12,410,000	Med-High	Y

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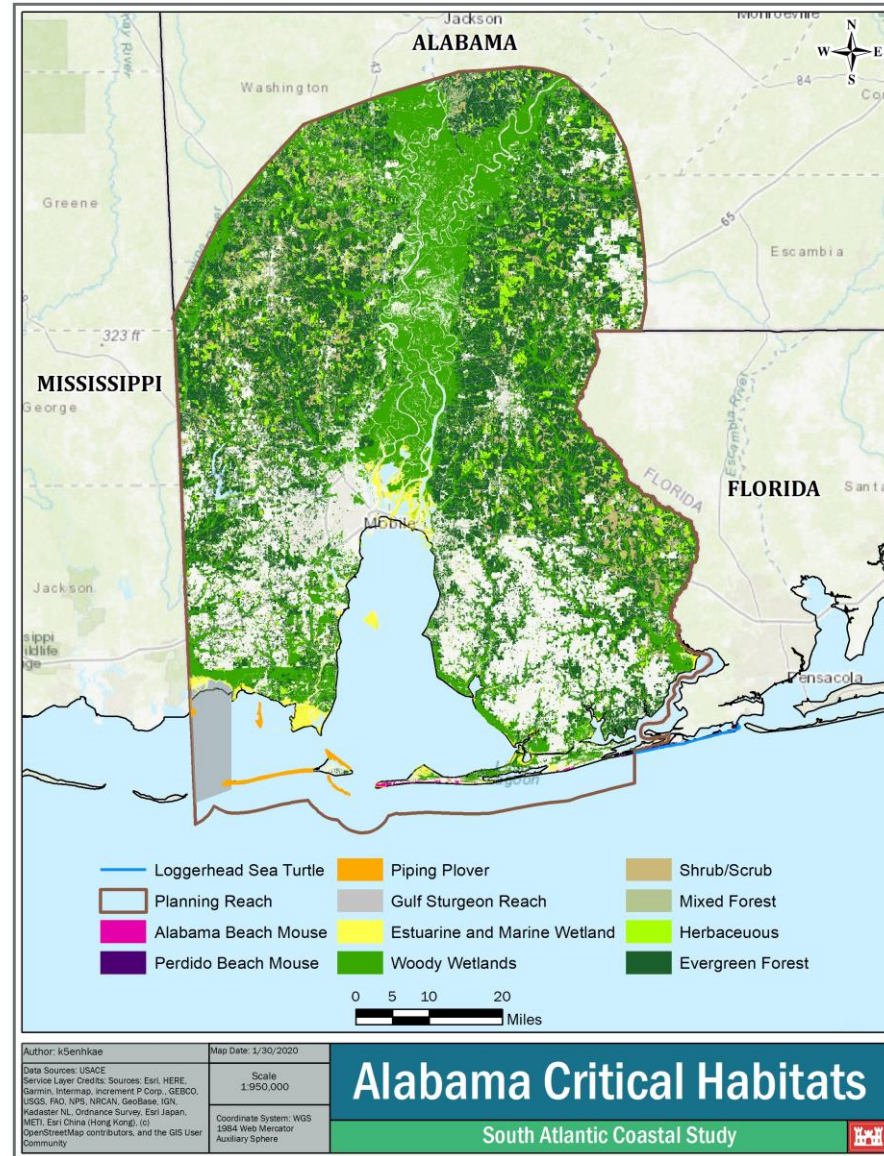


Mobile District Update



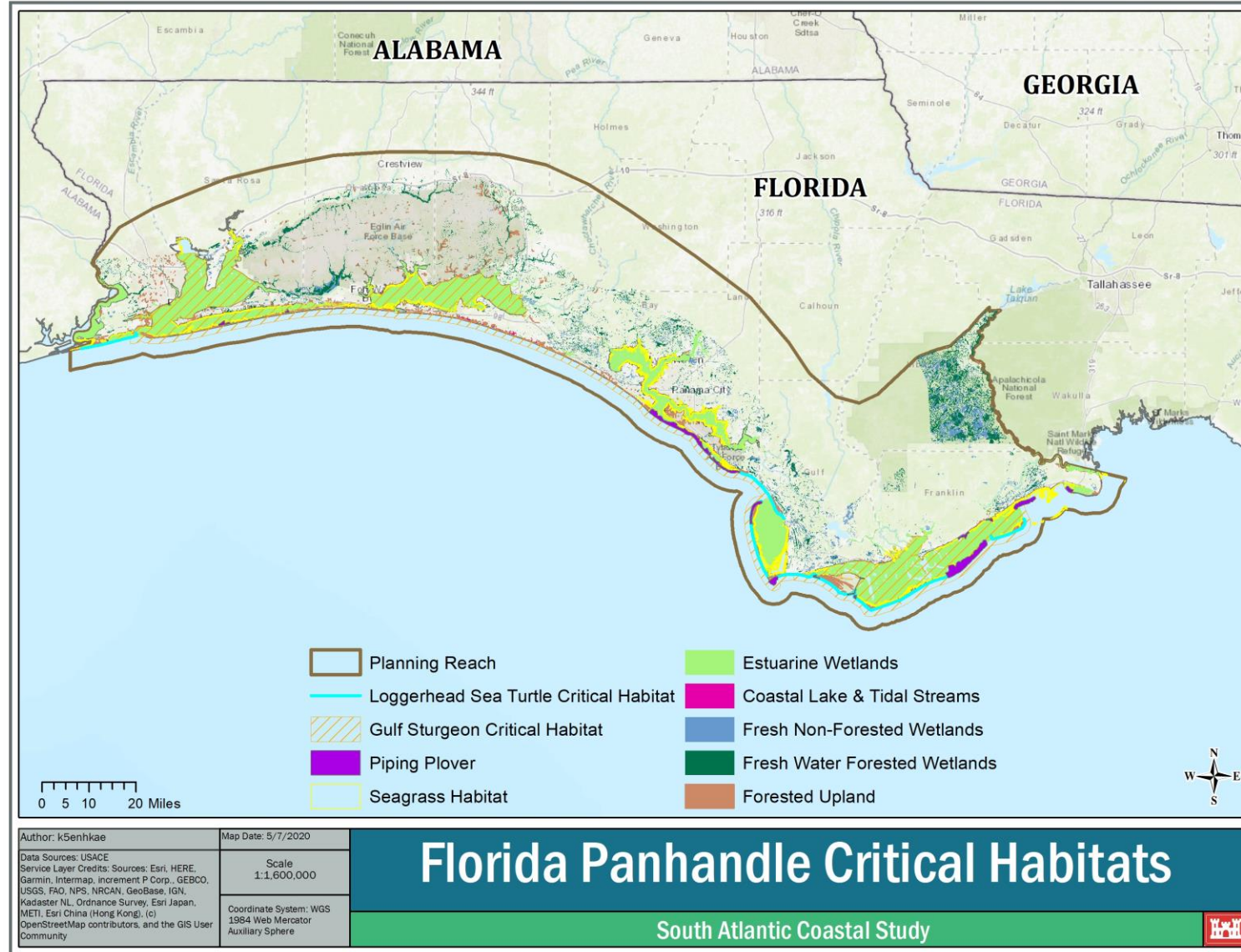


Mobile District Update





Mobile District Update





Looking Ahead



Next 3 months and beyond

- JUL 2020:** Kick-off FAAS Workshops
Environmental Agency Workshop
- AUGUST 2020:** FAAS Strategy Development Workshop
Cultural Resources Agency Workshop
- OCT 2020:** FAAS Wrap-Up Workshop
Quarterly Webinar Update #3
- NOV 2020:** Final Sand Availability Needs Determination
Draft FAAS
- DEC 2020:** Risk Reduction Measures/Recs
Draft Coastal Program Guide
- OCT 2021:** Draft Report

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Questions & Discussion



Thank You



ADDITIONAL INFORMATION

<https://www.sad.usace.army.mil/SACS/>

OUTREACH

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